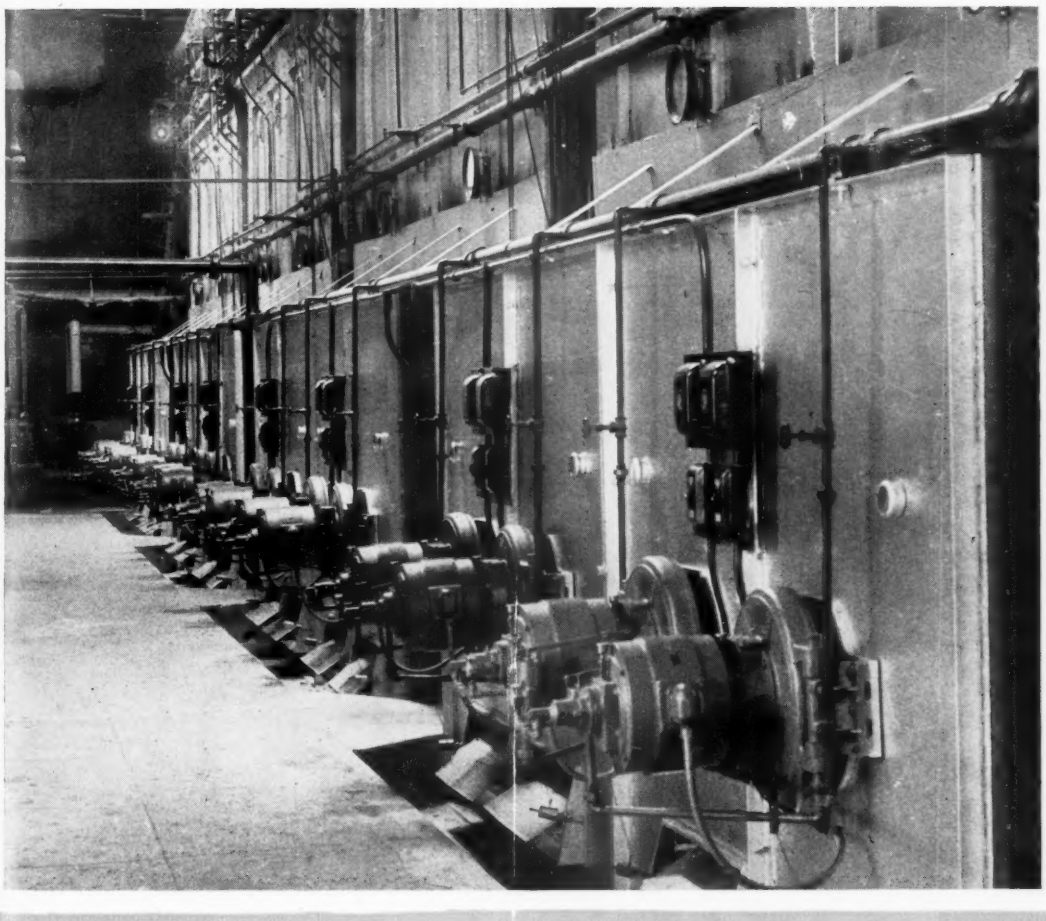
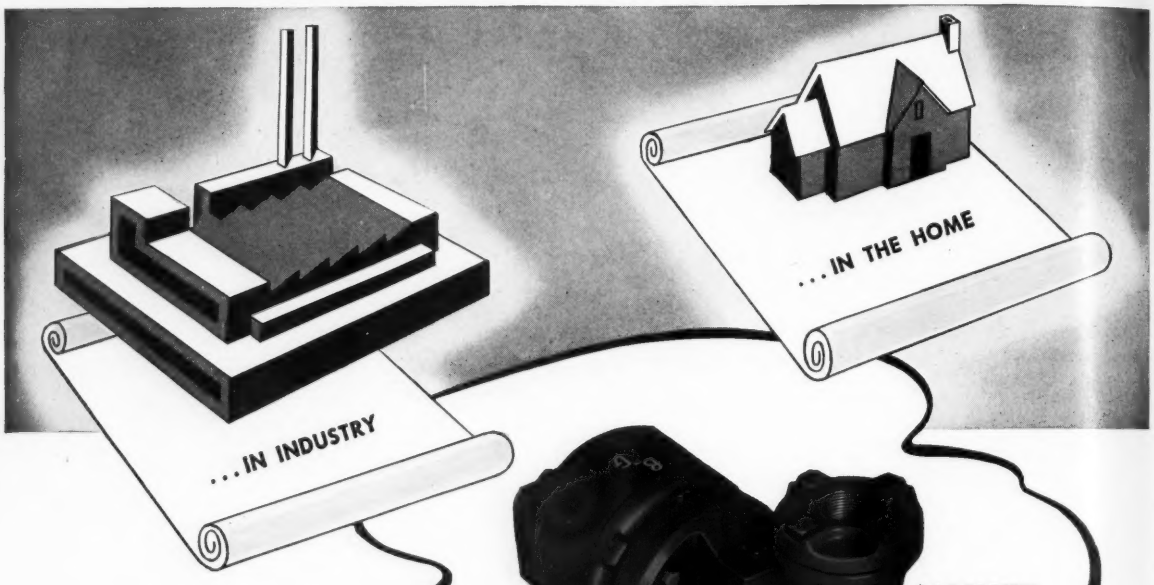
DECEMBER, 1943

# fuel oil & oil heat

## STACKS



# THE HEATING SYSTEM OF TOMORROW PROVED ITSELF *BEFORE* THE WAR




**Forced Hot Water Heat, with its better control of temperature, greater economy of fuel, material and installing labor offers the best in heating to post-war building.**

The amazing progress of B & G Forced Hot Water Heating can be credited to only one thing—*the fundamental superiority of water* as a heating medium! From a small beginning in residential applications, the use of this System has spread to apartment houses, institutions and industrial plants, establishing in each a new standard of heating comfort and economy.

A B & G Forced Hot Water System can be controlled to provide the smooth modulation of heat necessary to a perfect balance between heat input and heat loss. *It does this with a minimum of the simplest kind of equipment.* The system is easily zoned for sectional temperature control to satisfy personal preferences or the various functions of the building.

Labor, material and space are saved by the B & G Monoflo Fitting, a device which permits the use of a *single* pipe main, instead of the conventional flow and return mains.

**SEND FOR B & G HANDBOOK**

Complete, simplified design instructions are given in the B & G Handbook. Your copy will be sent promptly on request.

*This newly erected apartment building is heated with a B & G Monoflo System, divided into nine zones for sectionalized control of temperature.*

**B&G** **MONOFLO SYSTEM**

**BELL & GOSSETT CO.**
MORTON GROVE, ILLINOIS

## *"Yes, ma'am, we'll fix it . . ."*

SO you get the truck over there as soon as you can, and you find the usual thing... house cold, burner not running, enough oil in the tank.

"It's been kind of acting funny for a couple of days," she says, "and then this morning it just quit." Well, that's some help.

Strainer first. That's always the best thing to check first. It's there to catch the stuff that won't burn. Get out the socket wrench and take that cover off. Eight bolts. Watch you don't ruin the washer.

Now, get the strainer out. If it's really dirty ...and they usually are...ease it out carefully.

What a mess. Get a toothbrush and a can of naphtha, or spirits, or gasoline...or sometimes good hot water will do. Scrub that fine wire mesh clean but be careful you don't punch any holes in it. Blow it out. Dry it off. Put it back, washer, cover, bolts ...and pull 'em down snug.

Now, get her going again. O.K.? Fine. "And thanks ever so much!" "You're welcome, ma'am."

Be sure you've got our free Service Bulletin 102. If you have to replace old or worn-out pumps, use the Sundstrand S-1, S-2, or 1-OB Fuel Units. Write for Bulletins 106 and 107 showing mounting adaptors and foot mountings.

"Yes, sir, we'll fix you up..."

*Keep Buying War Bonds*

**SUNDSTRAND PUMP DIVISION**

SUNDSTRAND MACHINE TOOL CO. ROCKFORD, ILLINOIS U.S.A.

**2556 ELEVENTH ST.**
**ROCKFORD, ILLINOIS**

*fuel oil & oil heat*

**Stok-A-Timer**
A very dependable stoker control. Easy to adjust for various conditions.

**HOT WATER LIMIT**
A new and convenient type with outside adjustments. Available also as a combined limit and forced circulation control.

**WARM AIR LIMIT**
A new small type with outside adjustment. A similar control also available for fan or blower application.

**Visaflame**
A light actuated safety control system assuring full protection against flame, ignition or power failure. A great improvement in oil burner control performance. Types available for domestic and industrial applications.

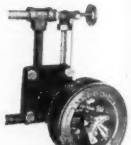
**SENSATHERM**
Recognized as the most dependable thermostat on the market. It maintains an even room temperature without the use of artificial acceleration.

**HBH SENSATHERM**
A two-stage thermostat of proven merit. Successfully used on Hi-low burners and with hot water heat having forced circulation.

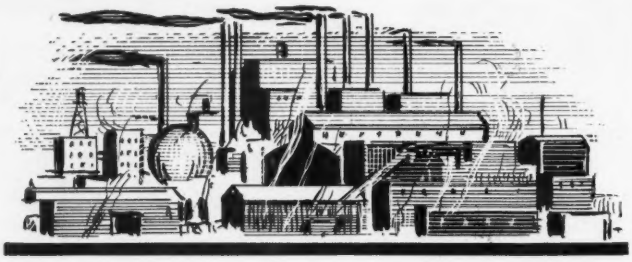
**Safety & Ignition Control**
Well known to the trade for its all-around dependable service. Guards against flame or ignition failure.

**Pressure Control**
This control has a record for its reliable service and long life. The outside double adjustment is a favorite with the trade.

**Immersatherm**
A summer-winter domestic hot water supply control. Used with steam, vapor and hot water systems, also on many industrial applications.



**Combined Pressure & Low Water Control**
Guards against low water and excess pressure in steam boilers.



# NOW

Mercoid Control production is now largely confined to industrial types for American industry engaged in essential war work.

THE MERCOID CORPORATION • 4201 BELMONT AVE. • CHICAGO, ILL.

## WHEN IT'S OVER

*—and we again get back to the normal way of life, many more homes will have the opportunity of enjoying automatic heat the Mercoid way of perfect room temperature control with oil heat, coal stokers, etc., on any type of heating plant*

VOL. 2 No. 8

fueloil & oil heat

DECEMBER 1943

## Names in the news

*Stuart M. Crocker,* formerly head of General Electric's Air Conditioning Division, has been named president of Columbia Gas and Electric Corporation, one of the country's largest utility holding companies.

*J. T. Grotenhouse,* president and general manager of Silent Sioux Oil Burner Corp., Orange City, Ia., has bought the holdings of all other stockholders, and once more is sole owner of the company. Mr. Grotenhouse organized the company and started to make oil burners in 1921. On June 1, 1929, four other stockholders bought a minority interest in the company, which now has been again acquired by Mr. Grotenhouse. Present officers are *J. T. Grotenhouse,* president and general manager; *R. G. Grotenhouse,* vice-president and treasurer; *D. M. Jurriaans,* secretary.

*Mr. Grotenhouse*

*Steven B. Wilson,* chairman of the board of the Fram Corporation, has been relieved by the War Department, and has resigned as Lieutenant Colonel to return to the company, which is making filters for the armed forces as well as for commercial application.

*Harry S. Shedlov,* former oilburner manufacturer, and more recently Regional Fuel Rationing Officer for OPA in the seven-state Chicago Region, has become a consultant and business counselor specializing in rationing and other problems involving government agencies.

*L. J. Schanz,* advertising manager for Mercoid Corp., Chicago, has been elected to a fourth consecutive term as secretary-treasurer of the Chicago Industrial Advertisers Association.

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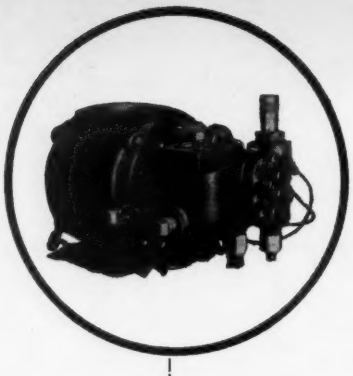
*SPECIAL MOTORS DESIGNED TO FIT THE APPLICATION



## EXTREME QUIETNESS AND LONG LIFE

If operating conditions were always the same . . . if there were no differences in types and sizes of the product — there would be no need for special motors. But we know that variables do occur in equipment, such as oil burners, and other electric motor operated apparatus, which require specially designed motors to meet specific performance requirements of compactness, quietness, overload protection and long life. Holtzer-Cabot special motors are meeting the operating conditions in various types of equipment.

Holtzer-Cabot has concentrated its energies in the specialized business of designing and building special fractional HP motors for every purpose. Our engineers, backed by 68 years of motor design, can help you with your motor problems.

**THE HOLTZER-CABOT ELECTRIC COMPANY**

*Designers and Builders of Special Fractional HP Motors and Electrical Apparatus*

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if you are one of the thousands of dealers who in times past have sold oil burning space heaters, water heaters and stoves equipped with "DL" float valves, because these valves require so little service.

It takes only a few minutes to take apart a "DL" float valve, clean it, and assemble it again. And the only tool needed is a screwdriver.

In these days when dealers are harassed by shortages of manpower and repair parts, every minute saved is doubly important. And that's why so many dealers appreciate "DL" float valves and the "simplicity of design" which has always been our beacon.

* * * *

*When oil burning equipment again appears on the market, make certain the line you select is equipped with "DL" valves. That isn't luck, that's plain common sense.*

**DETROIT LUBRICATOR COMPANY** *General Offices:* **DETROIT 8, MICHIGAN**

Division of AMERICAN Radiator and "Standard" Sanitary Corporation

*Canadian Representatives*—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

**"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators**

fuel oil & oil heat

# TOMORROW as Always

## A SURE SIGN OF Better Living AND Better Business

FOR more than twenty pre-war years, Williams-designed, *precision-built* products made Oil-O-Matic a world-wide synonym for better living.

Tomorrow, pre-war experience and wartime know-how will merge to bring even greater efficiency and dependability, even greater diversity, even more remarkable performance to the greatest line of *precision-built* Oil-O-Matic products ever to serve the America home.

Whatever the design, shape or size of the post-war homes which War Bond billions are going to furnish and equip, you can look to Oil-O-Matic for even better products for better living . . . for *your* better business.

THE BONDS YOU BUY TODAY ARE YOUR GUARANTEE OF A Better Tomorrow!

**BUY WAR SAVINGS STAMPS & BONDS**

ARMY E NAVY

WILLIAMS OIL-O-MATIC HEATING

**WILLIAMS OIL-O-MATIC HEATING CORPORATION**

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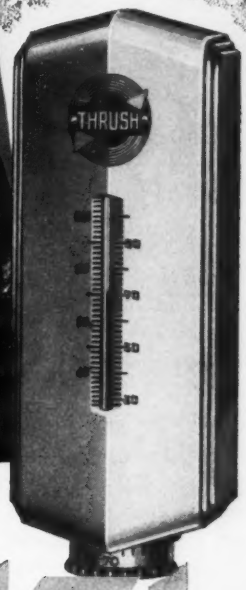
Buy U. S. WAR BONDS



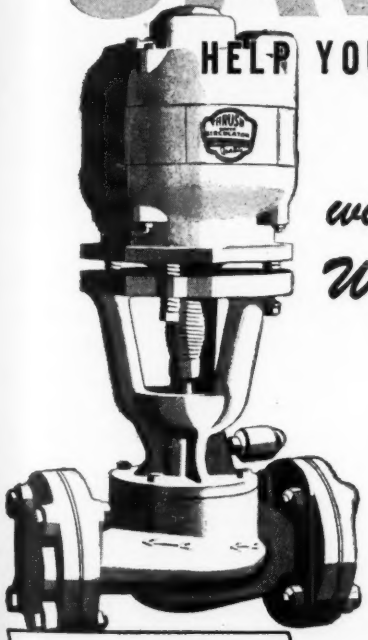

*Uncle Sam Says We Must*

# SAVE FUEL

## HELP YOUR CUSTOMERS AND SPEED VICTORY

*with* **THRUSH**

*Water Circulators and Controls*

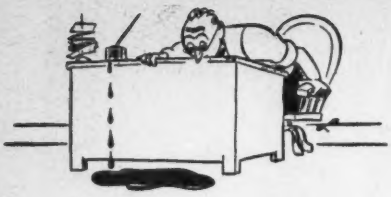


**THRUSH WATER CIRCULATORS**
provide positive, quick heat distribution, save fuel, pipe and fittings.

**SAVE FUEL** and material for victory! Stop wasteful overheating from poor control of room temperature and uneven heat distribution. You can cure it by installing a Thrush Water Circulator which will assure quick delivery of heat to every radiator through smaller pipe and fittings. Installing a No. 201 Thrush Radiant Heat Control (special heat anticipating room temperature thermostat) to operate the Circulator will give even greater fuel conservation and a constant supply of radiant heat. The War Production Board asks you and us and all engaged in the heating business to immediately initiate a campaign to make heating plants more efficient everywhere. Thrush equipment is the answer. It's up to you to tell home owners in your community about it . . . and get the business. See your wholesaler today or write Department **C-12.**

**H. A. THRUSH & CO., PERU, IND.**

fueloil & oil heat



# Editorial leaks

Oilheating men must give serious consideration to a new problem that may come "on stream" along with the seventy-two catalytic refining plants that are to be in production in the near future. Though it has been vaguely recognized that problems might present themselves, few in the industry have realized how close these problems may be.

In a rush of construction that now has 44,000 men working day and night, the country is building tremendous new refining capacity for the production of 100-octane gasoline and other vital war products. These products will demand an increasing percentage of each barrel of crude run to stills, and already take 8.3% of each barrel, contrasted with 1.2% before Pearl Harbor. It is indicative that the five major petroleum products, gasoline, kerosene, distillate, residual and lubricating oils, accounted for 95.2% of each barrel of crude processed in the first eight months of 1942, but represented only 94.1% of the crude run in the same period this year. These figures are before the bulk of the catalytic refineries, recently built and building, exerted their effect on the statistics. We may be sure that a constantly increasing percentage of each barrel will go into such ethereal products as 100-octane gasoline or better, toluene, butadiene, and similar aristocrats of the oil family.

It is not the threat of this demand in terms of thousands of barrels of oil that constitutes the menace to the oilheating industry, though this physical demand may make certain tight products tighter. It is the effect such refining has on the other products that may cause us trouble. When the "spark" or the "spirit" of the very light ends is removed and concentrated in the war products, that which is left is bound to suffer. Administrator Ickes already has warned motorists that they are due for poorer grades of motor gasoline, and he could have added that kerosene and distillates will either be in shorter supply or of a poorer grade as the catalytic plants come "on stream."

There is talk of reviving the No. 4 oil specification, and the possibility of changing the specifications for No. 2 and No. 3 fueloils. This does not necessarily mean that these oils are going to be appreciably heavier in gravity, but only that they will have high flash and fire points, higher end points, and be harder to ignite, and slower to burn. This will mean that some kerosene will be pushed down into the distillates, and borderline distillates will drop down into residual specifications. The middle products in the barrel will suffer as we increase the products from the very top and the bottom of the barrel.

There is no way to guess at this time what effect these new plants will have on the quality of our post-war oils, but it is certain that we may look for a poorer grade of burning oils before the end of this heating season. They will contain as much heat as ever, and probably will not be appreciably heavier, but they are likely to be harder to ignite and burn.

Kerosene, which already is becoming a supply problem, may suffer in quality to maintain the necessary volume. Poorer kerosene will create problems with wick type heaters and shell type range burners. Any very great change in flash point of distillate heating oils will require changes in ignition systems of some domestic burners, and almost inevitably will require readjusting oil-air ratios to avoid excessive smoke and carbon formation if the end point is very much increased.

Manpower shortages at preesnt may make it extremely difficult to make the required adjustments and to do the addition cleaning that may become necessary if fueloil quality is much changed. Dealers should watch closely for any appreciable change in fueloil specifications during the winter ahead, and be prepared to do whatever is necessary to avoid excessive service.

Any permanent change in heating oil specifications may make oilburner design changes necessary. Manufacturers planning post-war products will be wise to keep this possibility in mind and design equipment capable of igniting and burning these catalytic distillates cleanly.

There will, of course, be large refining capacity still available in the older refineries but kerosene and distillates from these plants will not be available in sufficient volume to supply the current demand when a large portion of the crude supply is sent to the new catalytic refineries to make high vitamin war products. Civilian gasoline, kerosene and distillate heating oils from these plants are sure to suffer in quality, though the quantity may not be severely affected. It seems doubtful at this time that there will be a continuing demand for the volume of light products after the war which it is necessary to produce at this time, but plans are being made to produce butadiene, premium grade gasoline and a number of petroleum synthetics after the war. The permanent effect of such refining on kerosene and distillate specifications is not now clear. It is certain that there will be plenty of oil for heating, but it may not be the same oil we have had in the past.

◈

Arguments to raise the price of crude center around the greater incentive it will create to discover more oil. The greater the price, the more production, it is contended. One point is puzzling.

Wildcatting for oil, it is said, is done chiefly by independents who are almost a breed apart—plungers who will risk big money for big returns, but are not interested in gambling $50,000 to $100,000 of their own or the neighbors' money at present crude prices. To drive two miles of hole in the back forty is an expensive operation, and on the basis of last year's records, there is one chance in six that the well will hit oil. In the past, the odds have been longer. It is understandable that the returns must be generous to tempt important money at such odds. Nobody knowingly invests in dry holes.

The puzzling part of present wildcat economics is how the return can be made sufficiently attractive to interest the kind of money necessary to drill. If the Neighbors Oil & Gas Company drills a dry hole it is out $50,000 and out of luck. If the company strikes oil in quantity it will make a lot of money, but money is hard for any company to keep in the bank these days. The tax collector may have a prior lien on 80 to 90 cents of every dollar the company earns. Under such circumstances it is hard to see how long risk capital is going to be enthusiastic about a 20% share of its possible earnings.

# Webster Electric Transformers Help Provide Hot Showers for Soldiers

Here's a new way Webster Electric products have gone to war!—doing their faithful, dependable part in furnishing automatic burner ignition on mobile hot water equipment. Hot showers for our boys right up near the combat zone!

Pictured here is a Portable Field Bathing Outfit, which is a fine product of Cleaver-Brooks Company, Milwaukee, Wisconsin. It is a mobile, self-contained, fully automatic, oil-fired water heating unit. Water pumped from a pond or stream is heated to a comfortable, refreshing temperature and discharged through eight shower heads. Naturally, Webster Ignition Transformers complete the reliability and rugged design, so necessary in equipment for our armed forces.

Webster Electric Fuel Units and Transformers are also used in mobile heating and cooking units, on ships and in camps all over the world to provide comfort and convenience to the men in the armed forces.

Here at home, now more than ever before, Webster Electric relies on their loyal authorized service stations and sales representatives listed below. Amid the pressure of war work and material scarcities, Webster Electric has kept faith by steadily moving forward parts, replacement transformers and fuel units, giving utmost service to keep your customers' equipment operating.

With Victory won, you can again call on Webster Electric to be ready with new units, sound in engineering design, more dependable and economically profitable than ever.

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**WEBSTER ELECTRIC COMPANY, Racine, Wisconsin, U. S. A., Established 1909. Export Dept.: 13 E. 40th St., New York (16), N. Y. Cable Address: "ARLAB" New York City**

***BUY MORE WAR BONDS***

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| California, San Francisco | Garland-Affolter Engr. Corporation | Rialto Building | Sales Representative |
| Connecticut, West Hartford | Bell Pump Service Company | 100 Park Road | Service Station |
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| Minnesota, St. Paul | Thermal Company, Inc. | 2448 University Avenue | Service Station |
| Missouri, St. Louis | Brass & Copper Sales Company | 2817 Laclede Avenue | Service Station |
| New Jersey, Elizabeth | Certified Fuel Unit Service Company | 600 Spring Street | Service Station |
| New York, Albany | Certified Fuel Unit Service Company | 1018 Central Avenue | Service Station |
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**Webster Electric "Type T" Fuel Unit**

# WEBSTER ELECTRIC

*"Where Quality is a Responsibility and Fair Dealing an Obligation"*

fuel oil & oil heat

# TRANSFORMER REPLACEMENTS SIMPLIFIED

### 3 TRANSFORMERS TO FIT 238 BURNERS

## *INTERCHANGEABLE* BASES *make a* LITTLE *do a* LOT

All you need is a screwdriver and Harvey Package #7 to make EXACT REPLACEMENT on any of the Burners listed below.

It is as simple as that, as each Base is labeled with the names of the Burner it fits and the proper Body to use.

Equip every Service Car with a "Package" and save expensive extra trips. Make more Profits.

**SAVE $5.85 on the PACKAGE**

| | | |
|---|---|---|
| **3 Transformers** | **$7.95** | **$23.85** |
| **12 Interchangeable Bases** | **.75** | **9.00** |
| **Total when bought separately** | | **$32.85** |
| **SAVING by buying PACKAGE** | | **5.85** |
| **Trade Price** | | **$27.00** |

**(F.O.B. Valley Stream, N. Y.)**

**Package No. 7—Trade Price $27.00**

## YOU ONLY NEED 3 TRANSFORMERS FOR THIS WHOLE LIST

**Transformers for any Burner on this list may be bought separately, but you save by buying the whole package.**

***(KEEP YOUR PACKAGE COMPLETE. THE PRICE OF THE REPLACEMENT TRANSFORMER INCLUDES BASE WHEN REORDERING)***

| Burner | Body Base |
|---|---|
| ABC, P-2, P-4, P-7 | F91 |
| ABC, H, P-11, P-27 | H88 |
| Aldrich, New Departure | G77 |
| Autocrat, D-1, D-2 | A88 |
| Auto-Heat, G-1, G-2 | G72R |
| Ballard, A-1, BA-1 | F72 |
| Bethlehem Doe, 81, D, G | A88 |
| Bethlehem Doe, FE | G72R |
| Bettendorf, H, HD-1 | A88 |
| Braden, XL | A88 |
| Campbell, A-30, B-30 | A88 |
| Carter Korth, P | A88 |
| Century, D, 2D | F91 |
| Century, SEC | A88 |
| Chalmers, H, D-1, D-4 | F91 |
| Chrysler Airtemp, B10, C-10 | F91 |
| Colt Automatic | A88 |
| Concord, G | G72R |
| Concord, GJR | A88 |
| Delco, D, DX, D-12, A, B, 3H | F91 |
| Delco, DR, DRI | F92 |
| D'Elia, D, DX | A88 |
| D'Elia, DXB | F91 |
| Electrol, TJ | A88 |
| Electrol, TCV, TUV, X-1, X-2, JM | F90 |
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| Fairfield, F | A88 |
| Fairfield, J | G72R |
| Fisk | G72R |
| Fluid Heat, Model 1 type P | G76 |
| Fluid Heat, P | F91 |
| Gilbarco, GBOD, GBS, GB1, GB1A, GB1B, GB1C, GB1D, GB1BF, GB1CF, GB1DF, GBOO, GBOOA | F72 |
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| Gold Star, J | A88 |
| Goodrich, SPA | A88 |
| Gould, A, B, C | G72R |
| Hart, A-1, H-3, D-1 | F91 |
| Hayward, A | A88 |
| Heat King, P-2, P-4, P-7 | F91 |
| Heat King, P-11, P-27 | A88 |
| Heat Master | A88 |
| Heil, 1-34 | A88 |
| Hercules | G72R |
| Hercules (Delco type) | F34 |
| Hercules M (Oil-O-Matic) | A59 |
| Home, A-1, A-2 | G77 |
| Home, C-1, D, H | A88 |
| Home, K-1 | F91 |
| Hupp, H, U, P | A88 |
| Johnson, S. T. B-1, B-0 | A88 |
| Kelvinator, 0256-B | A88 |
| Kleen Heet, 805, 820 | A88 |
| Kleen Heet, 900, 902, 904, 908 | F91 |
| Liberty, 600, 601 | A88 |
| Liberty Airflow, S-2 | G72R |
| Lynn | A88 |
| Master Kraft, J, T, K, U | F91 |
| Master Kraft, M, M-2, S | A88 |
| Mayfair | A88 |
| Mayflower | A88 |
| Mohawk, A, H | A88 |
| Motor Wheel, D | A88 |
| National | A88 |
| National, EJ-1, EJ-2 | G72R |
| Nu-Way | A88 |
| Nu-Way, LD-25 | F72 |
| Oil-O-Matic, K1.5, K150, K3, K450, K7, WHA, WHB, WHC, WBC, HP1, HP3, HP3A, HP7 | G7 |
| Oil-O-Matic, K, KB, JR, R | A59 |
| Oil-O-Matic, G, J | A88 |
| Petro, P1½, P-11, L | A88 |
| Petro, P9X, P9-10C, P9-70 | A72 |
| Petro, P-20, P-21, P-22 | F91 |
| Pierce, G | A88 |
| Pioneer, CJ, CJS (old style), CJH, CJL | A88 |
| Quiet Heat, C-1 | F91 |

| Burner | Base Body |
|---|---|
| Quiet May, BB, F, W, N, SMT, NSJ-1 | LCT, F91 |
| Quiet May, B | A88 |
| Real Host, C | A88 |
| Reliable, H-1 | A88 |
| Rexoil, H, HJ | A88 |
| Reynolds Air Cond., GC | F6 |
| S-K | A88 |
| Silent Glow, 1000, G | A88 |
| Silent Heat | F91 |
| Simplex, SP-2, size 7 | A88 |
| Standard, 3 | A88 |
| Sunray, 1, 3, 6 | G72R |
| Syncroflame | A88 |
| Thermoil | A88 |
| Timken, GH | F72 |
| Timken, GC, GF, GA | F6 |
| Toridheet, (gun) | A88 |
| Volcano, EW | F91 |
| Wayne, S | A88 |
| Westinghouse, K3, K4, 45 | G86 |
| York, (after '34) | A88 |
| York Type, 500 | A88 |
| York RO | A88 |

**Note: Transformers in this package are all 110 volt, 60 cycle, with 2 pole 10,000 volt secondary.**

**You can get ANY kind of Transformer at Sid Harvey's! Regularly carried in stock: 110 & 220 volt primary—5,000, 10,000, 12,000, & 14,000 volt secondary —Single & Double pole. Secondary outlet on the end, on the side & on the bottom — Small case & Large Case. Special mounting & Universal mounting. We have the largest variety in the industry.**

## YOUR GENERAL HEADQUARTERS FOR SERVICE PARTS

**SPECIALISTS IN PARTS AND REBUILDING SERVICE FOR ALL MAKES OF OIL BURNERS - - - - - - - - *SINCE 1931***

**SID HARVEY INC.**
**VALLEY STREAM, NEW YORK**

## "TO YOUR GOOD HEALTH, SOLDIER"

Yes, we drink to your health . . . but we do more. We work night and day to keep it a reality. We help keep your barracks, mess-rooms, and recreation-rooms at healthful temperatures. We help keep your clothes clean, and sanitary. We help prepare your proper, well-balanced diet.

Yes, here in York we are devoting all our efforts toward backing you up 100%. Much of our work is producing York Oil Burners that are seeing service on almost every front. And you can bet that it is the finest burner that our long years of experience make it possible to produce.

Supplying dependable heating-units for your laundries, quarters, and kitchens that stand-up under battle conditions, has taught us a lot, too. And when you come home, you'll find new features engineered into York Oil Burners that will mean new comforts and new conveniences.

* * *

Buy Bonds, and keep on buying, so that we'll have the purchasing power to provide these men with jobs when they return.

YORK HEAT

*Division of* YORK-SHIPLEY, INC., York, Pa.

## CULTIVATING TOMORROW'S MARKET

# *Today!*

When the shouting's all over and you settle back to cashing-in on the tremendous post-war market, York Heat will be on hand to help you with the finest oil-burners in its long history.

Building up an acceptance for York Heat is also part of the job. Every month hundreds of your future customers are reading York Heat messages like these in leading magazines.

Be sure to include York Heat in *your* post-war plans. In the meantime, copies of the York Heat Service Manual are available to help you service your present customers.

**This is another of the YORK HEAT advertisements appearing regularly in:**

AMERICAN HOME — HOUSE *and* GARDEN
HOUSE BEAUTIFUL — TIME (*Canadian Edition*)
BETTER HOMES *and* GARDENS

**YORK HEAT**

***Division of* YORK-SHIPLEY, INC., YORK, PA.**

fuelfoil & oil heat

# "JUST MY DISH"

A DISH we did not order—but a dish we will clean up. Our appetite has now been whetted for just such a job and now that we've got the tools we'll clean these dishes as they never have been cleaned before.

It has taken some time to work up this appetite. It has been a big job to produce the necessary tools, but our partners on the home front production lines, working night and day, have done their part in sending a never-ending flow of material necessary for us to finish the task of making this a free world for all people to live.

The Luxaire production facilities have had no let up in turning out a continuous flow of weapons and materials that go all the way from the barracks to the fighting fronts and there will be no let up until our job is done. Our job is VICTORY.

**BUY MORE WAR BONDS AND STAMPS**

Luxaire

**WARM AIR FURNACES . . . AIR CONDITIONING UNITS . . . COAL . . . GAS . . . OIL**

**THE C. A. OLSEN MANUFACTURING COMPANY ELYRIA, OHIO**

# SERVING FOR VICTORY...

# PREPARING FOR PEACE

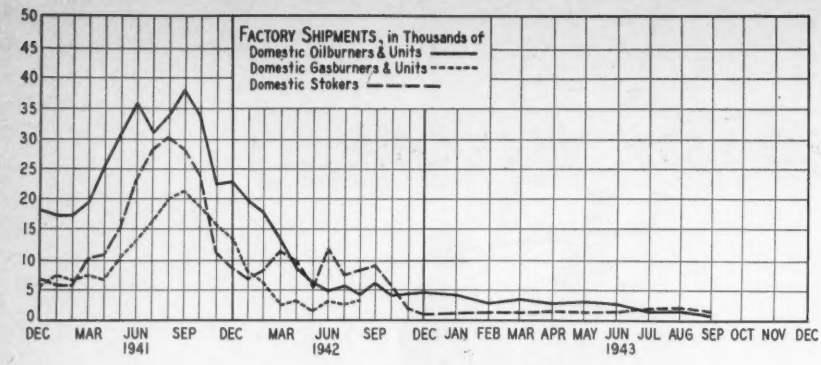
Today, Silent Glow's skills are being applied to the manufacture of precision instruments for use by our Armed Forces around the world. High tolerances must be met in the production of intricate mechanisms for anti-aircraft guns, and Silent Glow, with its background of unerring accuracy and craftsmanship, is ideally fitted for this task.

So, while we bend every effort to produce the tools of victory, we are gaining further experience and skill, which one day can be put to work in the building of oil heating equipment for home and industry.

**SILENT GLOW OIL BURNER**

*BACK THE ATTACK WITH WAR BONDS*

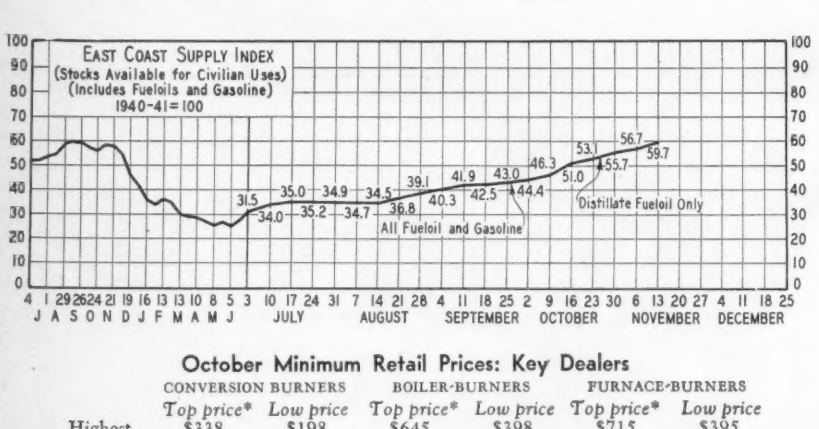
**THE SILENT GLOW OIL BURNER CORPORATION, HARTFORD, CONNECTICUT**


FACTORY SHIPMENTS, in Thousands of
Domestic Oilburners & Units
Domestic Gasburners & Units
Domestic Stokers
DEC MAR JUN SEP DEC MAR JUN SEP DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1941
1942
1943

## Shipments of Oilburners and Units

Adjusted to include manufacturers other than the 137 reporting to Census Bureau, FUELOIL & OIL HEAT's estimates of shipments are:

| | SEPTEMBER | | | NINE MONTHS | | |
|---|---|---|---|---|---|---|
| | 1943 | 1942 | Percent Change | 1943 | 1942 | Percent Change |
| Conversion | 693 | 4,159 | —83.3 | 12,652 | 61,737 | —79.5 |
| Boiler units | 166 | 681 | —75.6 | 5,870 | 8,439 | —30.4 |
| Furnace units | 176 | 1,290 | —86.3 | 4,779 | 16,187 | —70.4 |
| All domestic | 1,035 | 6,130 | —83.1 | 23,301 | 86,363 | —73.0 |
| Commercial | 3,641 | 5,155 | —29.4 | 35,385 | 43,503 | —18.7 |
| Total | 4,676 | 11,285 | —58.5 | 58,686 | 130,226 | —54.9 |



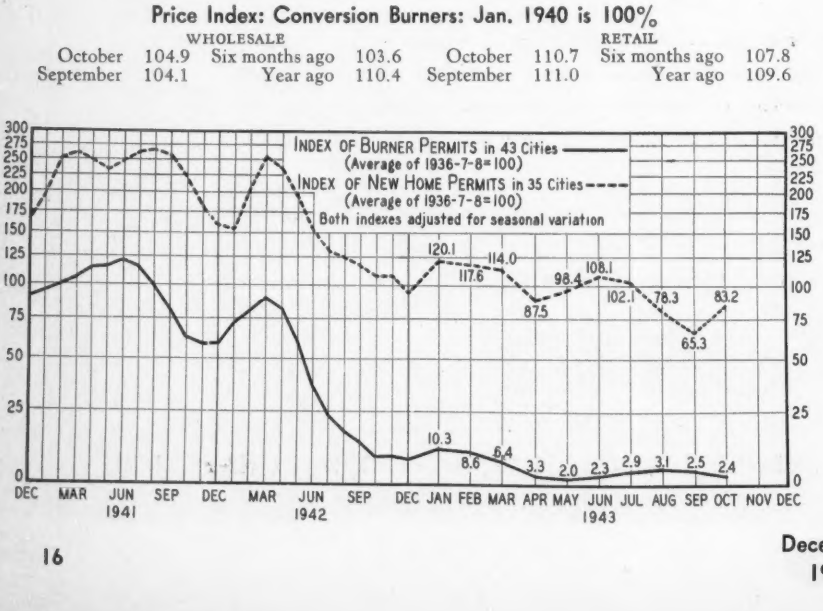

## October Minimum Retail Prices: Key Dealers

| | CONVERSION BURNERS | | BOILER-BURNERS | | FURNACE-BURNERS | |
|---|---|---|---|---|---|---|
| | Top price* | Low price | Top price* | Low price | Top price* | Low price |
| Highest | $338 | $198 | $645 | $398 | $715 | $395 |
| Lowest | 215 | 169 | 425 | 335 | 425 | 340 |
| Oct. Aver. | 263 | 186 | 504 | 376 | 502 | 375 |
| Sept. Aver. | 266 | 175 | 488 | 366 | 513 | 360 |

*Top price key dealers for conversion burners are those whose minimum retail prices are $200 or more; for boiler-burner and furnace-burner units (exclusive of ductwork) those whose minimums are $400 or over.

## Price Index: Conversion Burners: Jan. 1940 is 100%

| WHOLESALE | | | | RETAIL | | | |
|---|---|---|---|---|---|---|---|
| October | 104.9 | Six months ago | 103.6 | October | 110.7 | Six months ago | 107.8 |
| September | 104.1 | Year ago | 110.4 | September | 111.0 | Year ago | 109.6 |


INDEX OF BURNER PERMITS in 43 Cities
(Average of 1936-7-8=100)
INDEX OF NEW HOME PERMITS in 35 Cities
(Average of 1936-7-8=100)
Both indexes adjusted for seasonal variation
DEC MAR JUN SEP DEC MAR JUN SEP DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1941
1942
1943

# Oilheating Trends

INSTALLATIONS of domestic oilburners and units in October are estimated at 1,248, down 60.7% from the same month a year ago. This is the most favorable percentage comparison with the previous year in many months. Reasons are increased replacements of worn-out burners before the heavy heating load comes, intensified by the increasing scare publicity on coal shortages. Some of these installations were undoubtedly reconversions, although very few were so labeled specifically by reporting dealers. Burner permits from 40 reporting cities were down 50.7% from 1942 and key dealers had a decline of 70.8%. October installations of 1,248 compare with 510 in September and 328 in August.

PRICES: Reported wholesale prices were slightly higher on the index and retail off a fraction of a point. However, the relatively slight change in the index is misleading if it conveys little price change activity. A number of individual companies changed prices up or down by several dollars as the heightened consumer interest stimulated them to unload stocks or push for adequate profits. The index is stable because about the same number pushed up as down.

STOCKS: No check of dealer stocks was made this month, but can be estimated at about 13,000 domestic burners and units. Factory stocks dropped slightly during September, the most recent month with complete figures. The month started with 35,661 and ended with 35,348, all domestic equipment. Shipments during the month were 1,035, so indicated new production was 722. A breakdown of factory stocks on September 30 shows 16,996 conversion burners, 9,379 boiler units and 9,063 furnace units.

SERVICE INCOME: October service department income of reporting dealers was $3,119 or 26% above the average of $2,476 for the same dealers in October, 1942. September service income of the group averaged $3,759 and August $2,125. While these figures are all well above a year ago, they would be still higher if service men could be found to do the work. One dealer comments that he could use three times the number of service men he has. He expects more cold homes this winter due to unserviced burners than to oil shortages, and also points

out that one of his worst troubles now is the owner trying to repair his own burner when he can't get the service man promptly, and making matters worse by really gumming up the works.

Dealers were asked if they filed their service prices with their local ration boards. Only 4% of those reporting did not, apparently feeling that they will fare better under the fixed price ceilings recently announced by OPA than by filing and adhering to March 1942 prices.

RECONVERSIONS: Government agencies are trying hard to hold the line against reconversions to oil in the face of strong consumer pressure stimulated by the coal shortage. Residential reconversions are being allowed by OPA and PAW only in the rarest hardship cases, but it is well known that some are being bootlegged. Reporting fueloil distributors in Eastern states say that domestic reconversions to date have swelled their gallonage demand by about 1.2%; in the Midwest the change is negligible. Indicative of the zeal to get back to oil are reports of prices as high as $180 being paid in Philadelphia to slip back the owner's burner.

FUELOIL STOCKS: Because published Government figures on fueloil stocks include only primary storage, it is important to know about how supplies stand in dealer and consumer tanks. Eastern dealers report, as of November 1, that their distillate stocks were 12% above a year ago; kerosene stocks up 5% and residual up 10%. In the Midwest there was no change in dealer distillate stocks from November 1, 1942; on kerosene they were 11% lower and residual 3% lower. Consumer tanks, in both East and Midwest, appeared to have less oil than a year ago. Fueloil distributors were asked what percent of domestic heating customers had received by November 1 an initial tank fill-up to start the season. The answers averaged: Eastern 77%, Midwestern 67%. The comparable figures for October 1 were Eastern 57%, Midwestern 55%. It is obvious that many consumers had substantial amounts of oil left over from their last season's ration. There were actually less fill-ups this season to November 1 than to last October 1.

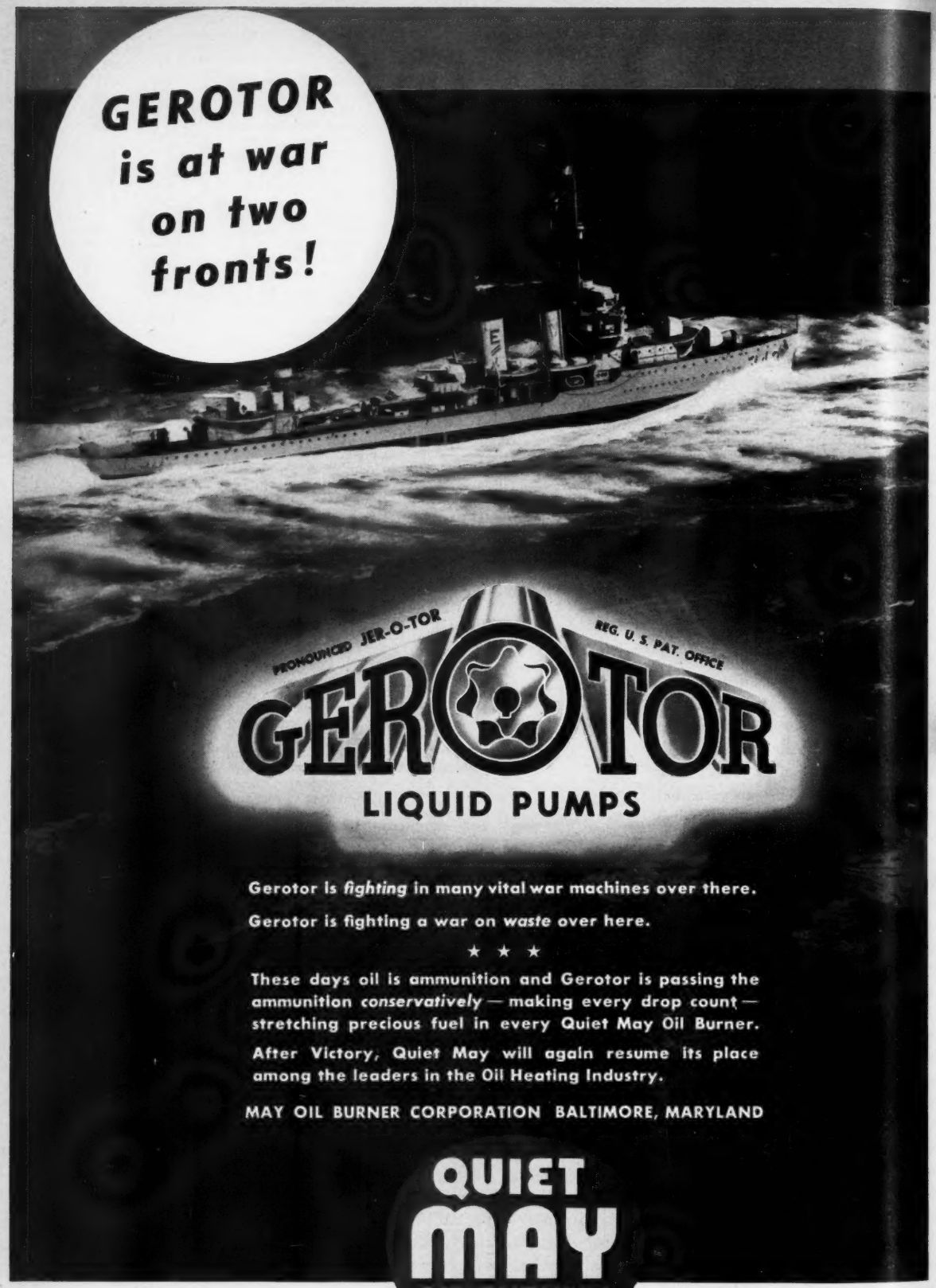
SUPPLY QUOTAS: Asked about the adequacy of their supply allocations to meet customer demands, every reporting Eastern distributor says they are ample for the season to date. One of the largest and best distributors faces it realistically, however, as being due principally to loose administration of the quota system. He points out, "The whole supply quota and allocation matter seems to be in as confused a state as can be imagined and our suppliers tell us, off the record, that the less attention is paid to them the better."

COMMENTS: Typical comments on some of the month's topics are: "Many who converted have a strong feeling to get back to oil" . . . "Boards need clarification of reconversion if permissible" . . . "Reconversion procedure in hardship cases should be left in hands of local boards; getting approval through PAW exceptions is unworkable; they have too little conception of local conditions" . . . "Since our city has a population of 110,000, the OPA service rate of $2.00 for the first hour is 50¢ higher than we had been charging" . . . "What the hell is this, (speaking of service price ceilings) another NRA?" . . . "WPB should simply release burners for replacement without all the stupid forms covering it" . . . "What about prices on service parts; prices are up to 10 to 50%."

## Oilburner* and Building Permits

| OILBURNERS | | | | | DWELLINGS | | | |
|---|---|---|---|---|---|---|---|---|
| October | | 10 MONTHS | | | October | | 10 MONTHS | |
| 1943 | 1942 | 1943 | 1942 | | 1943 | 1942 | 1943 | 1942 |
| .. | .. | .. | .. | Baltimore, Maryland | 480 | 19 | 1040 | 1310 |
| .. | .. | .. | .. | Binghamton, New York | 0 | 0 | 0 | 15 |
| .. | .. | .. | .. | Bloomfield, N. J. | 0 | 0 | .. | 117 |
| 28 | 103 | .. | 684 | Boston, Massachusetts | 0 | 39 | 22 | 170 |
| 8 | 5 | 11 | 190 | Bridgeport, Conn. | .. | .. | .. | .. |
| .. | .. | .. | .. | Buffalo, New York | 13 | 9 | .. | 125 |
| .. | .. | .. | .. | Des Moines, Iowa | 0 | 7 | 10 | 530 |
| 0 | 0 | 0 | 662 | Detroit, Michigan | 640 | 595 | 4127 | 6695 |
| 3 | 0 | 6 | 51 | Elizabeth, N. J. | 0 | 7 | 54 | 19 |
| 4 | 0 | 5 | 55 | Freeport, New York | .. | .. | .. | .. |
| .. | .. | .. | .. | Greenwich, Conn. | 0 | 0 | 3 | 23 |
| .. | .. | .. | .. | Hackensack, N. J. | 0 | 0 | 0 | 40 |
| 2 | 13 | .. | 366 | Hartford, Conn. | .. | .. | .. | .. |
| 3 | 4 | 29 | 397 | Hudson County, N. J. | .. | .. | .. | .. |
| 0 | 1 | 1 | 51 | Irvington, N. J. | 2 | 0 | 13 | 38 |
| .. | .. | .. | .. | Lynn, Massachusetts | 1 | 0 | 1 | 27 |
| 0 | 0 | 6 | 197 | Milwaukee, Wisc. | 119 | 22 | 324 | 588 |
| 16 | 13 | 78 | 343 | Minneapolis, Minn. | 0 | 3 | 2 | 372 |
| 2 | 12 | .. | 51 | Montclair, N. J. | .. | .. | .. | .. |
| .. | .. | .. | .. | Morristown, N. J. | 0 | 0 | 0 | 6 |
| 3 | 3 | 20 | 81 | Mt. Vernon, New York | .. | .. | .. | .. |
| 4 | 4 | 21 | 177 | Newark, New Jersey | .. | .. | .. | .. |
| 4 | 6 | 31 | 130 | New Bedford, Mass. | .. | .. | .. | .. |
| 2 | 3 | 4 | 72 | New Haven, Conn. | .. | .. | .. | .. |
| 0 | 4 | 6 | 28 | New Orleans, La. | .. | .. | .. | .. |
| 0 | 0 | 0 | 42 | New Rochelle, N. Y. | 0 | 0 | 0 | 19 |
| 5 | 7 | 49 | 737 | Manhattan, Bronx, Rchd. | .. | .. | .. | .. |
| 1 | 62 | 151 | 1026 | Norfolk, Virginia | 1 | 21 | 183 | 1000 |
| 3 | 1 | 8 | 17 | Oakland, Calif. | .. | .. | .. | .. |
| 12 | 4 | 36 | 270 | Omaha, Nebraska | 28 | 1 | 45 | 298 |
| 0 | 2 | 1 | 22 | Orange, New Jersey | 2 | 0 | 2 | 14 |
| 2 | 0 | .. | 32 | Passaic, New Jersey | .. | .. | .. | .. |
| 3 | 0 | 8 | 44 | Paterson, N. J. | 0 | 3 | 32 | 29 |
| .. | .. | .. | .. | Plainfield, N. J. | 0 | 8 | 18 | 51 |
| 1 | 0 | 5 | 65 | Portland, Maine | 9 | 11 | 58 | 95 |
| 8 | 7 | 54 | 982 | Portland, Oregon | 39 | 165 | 1428 | 1870 |
| 0 | 0 | 1 | 201 | Providence, R. I. | 0 | 0 | 0 | 40 |
| .. | .. | .. | .. | Reading, Penna. | 0 | 0 | 0 | 8 |
| 0 | 0 | 1 | 82 | Richmond, Virginia | 0 | 0 | 33 | 344 |
| 0 | 4 | 5 | 183 | Rochester, N. Y. | .. | .. | .. | .. |
| 2 | 0 | 7 | 60 | Rockville Center, N. Y. | 1 | 0 | 1 | 14 |
| 1 | 0 | 1 | 19 | Salem, Massachusetts | 0 | 1 | 0 | 9 |
| 6 | 12 | 49 | 325 | St. Louis, Missouri | 0 | 0 | 39 | 356 |
| 0 | 6 | 7 | 392 | St. Paul, Minnesota | 0 | 2 | 4 | 198 |
| 0 | 5 | 18 | 226 | Schenectady, N. Y. | .. | .. | .. | .. |
| .. | .. | 116 | .. | Seattle, Washington | 127 | 107 | .. | 1758 |
| .. | .. | .. | .. | Springfield, Mass. | 7 | 47 | 270 | 494 |
| 1 | 2 | 2 | 52 | Stamford, Conn. | .. | .. | .. | .. |
| .. | .. | .. | .. | Syracuse, New York | 0 | 0 | .. | 126 |
| .. | .. | .. | .. | Trenton, New Jersey | 37 | 0 | 140 | 2 |
| 9 | 12 | 35 | 876 | Washington, D. C. | .. | .. | .. | .. |
| .. | .. | .. | .. | West Orange, N. J. | 0 | 0 | 0 | 23 |
| 9 | 6 | 23 | 58 | White Plains, N. Y. | 0 | 0 | 0 | 3 |
| 0 | 4 | 3 | 104 | Wilmington, Delaware | 16 | 0 | 512 | 13 |
| 9 | 13 | 22 | 221 | Worcester, Mass. | .. | .. | .. | .. |
| 151 | 306 | 704 | 9520 | *Totals* | 1522 | 1067 | 8361 | 16839 |
| —50.7 | .. | —92.6 | .. | *Percent Change* | +42.6 | .. | —50.3 | .. |

*Permits are not total sales in each market since none are reported from suburban areas, which normally account for 20% to 60% of total sales in each market; nor are they an accurate index where enforcement is lax. Rightly used, however, they are a useful working index.


GEROTOR
is at war
on two
fronts!
PRONOUNCED JER-O-TOR
REG. U. S. PAT. OFFICE
GEROTOR
LIQUID PUMPS
Gerotor is *fighting* in many vital war machines over there.
Gerotor is fighting a war on *waste* over here.
★ ★ ★
These days oil is ammunition and Gerotor is passing the ammunition *conservatively* — making every drop count — stretching precious fuel in every Quiet May Oil Burner.
After Victory, Quiet May will again resume its place among the leaders in the Oil Heating Industry.
MAY OIL BURNER CORPORATION BALTIMORE, MARYLAND
QUIET
MAY
OIL BURNERS

# Something for you and America—

THIS circular tells the heating plant owner in a simple, forceful way how your services can cut his fuel bill—shows him what it means to him in dollars saved; what it means to his country.

It has been prepared to represent YOU solely—does not mention our product or any other manufacturer's product—shows the heating plant owner the steps *you* can take to put his heating equipment in proper shape. The circular is our contribution to the fuel saving crusade. Adoption of the suggestions it contains will mean not only conservation of the nation's fuel, but also additional business for you.

The circular measures 11" x 17" when opened—is folded down to envelope size for use as a "self-mailer". We will furnish as many as you require for a carefully selected list. If properly used—

**THESE CIRCULARS WILL:**

- **Conserve the nation's fuel**
- **Save money for your customers**
- **Create business for you**

**McDONNELL & MILLER**
**1310 Wrigley Bldg., Chicago 11, Illinois**
*Doing One Thing Well*

**We supply them —You mail them**

## *A Message* TO EVERY PROPERTY OWNER

★ ★ ★

MORE than 9-million tons of coal and more than 8½-million barrels of oil can be saved this heating season in domestic heating plants—plants like yours. Day after day you are being told by your government that conservation of fuel in the heating plants of buildings and residences is absolutely essential to the war effort.

We are bringing this to your attention because we have been asked, as a part of the heating industry, to do everything in our power to see that heating plants are in proper condition and adjustment to give the most heat from the least fuel.

Most wartime measures work hardships—but this is the exception. Even if it called for personal sacrifice we know that you, as a good American—a property owner—would make the sacrifice. But strangely enough this great contribution to the war effort—probably the greatest contribution you can make—does not in the final analysis call for giving—or giving up—anything!

**Indeed, it will ultimately save dollars for you. It will mean added comfort for you, and, in its final mass effect, it can solve a fuel shortage problem that could develop into a major disaster unless immediate steps are taken to prevent it....**

*...and note this—*

# *It does call for action...by you...NOW!*

## WHAT IT MEANS TO THE NATION:

**9,000,000 tons of coal saved**

**8,600,000 barrels of oil saved**

**180,000 coal cars released**

**36,120 tank cars released**

● The above is based on the estimate of Mr. Howard Coonley, Director of the Conservation Division of the War Production Board. Savings are predicated on an average saving of 5% in domestic heating plants.

Savings of ten, fifteen, or even twenty per cent are possible in practically any plant where the owner is willing to take even simple, inexpensive steps to reduce fuel consumption. So if there is even a fair response to the government's crusade for fuel conservation measures, this over-all estimate of 5% reduction is on the conservative side. If the response is what it *should* be, the saving of fuel for the war effort would be still greater than graphed above.

**WILL YOU DO YOUR PART?**

● While fuel conservation does *not* call for sacrifice, it *does* call for putting your heating plant in good condition at once—taking every possible step that will save fuel.

If your fuel is being rationed you will probably need no urging. You know how vital it is to your health and comfort to obtain more heat from your curtailed fuel allotment. But actually the need to save is equally urgent if you are burning coal or even gas. *For all authorities agree that it is only by cutting fuel consumption in every possible way that rationing of all domestic fuels can be avoided.*

This means that it is unfair—yes, un-American—to leave fuel conservation to "the other fellow." It is a case of all for one and one for all.

Our part in this wartime measure is helping you do your part. Highest authorities, including the U. S. Government, have said that it is possible to cut fuel consumption in the average heating plant from 15% to 50%, depending on the measures taken. This merely confirms what every experienced heating man knows. We know, moreover, that the cost of taking such steps is very moderate. Often it merely involves cleaning, adjustment and putting equipment in good shape. Always there is a greater return to the owner on the investment than on any other investment he can make in his home or building.

It has been said that if the average household gave its heating plant half the care bestowed on the family automobile, our national fuel bill would be reduced many millions annually. And no truer fact was ever uttered!

We ask the opportunity to show you what can be done to conserve fuel in your residence or building. For giving you the benefit of our long experience and quoting the moderate cost of suggested steps, there is no charge or obligation whatever. We consider it our duty to make this offer at this time, and we believe you will consider it your duty to accept it since it costs you nothing and can mean so much to your country.

Perhaps you think we "have an ax to grind." We do! In fact we have two of them: First, we want to do our part in proving that the heating men of America can discharge their wartime obligation. Second, we want to show you what we, as individuals, can mean to you as an individual. We look upon this as an opportunity to make and hold friends and customers for many years to come.

## WHAT IT MEANS TO YOU:

Every property owner has a stake in the future of America, so there are few owners of heating plants who would deliberately refuse to enlist in the crusade for fuel conservation. However, even if you forget the patriotic aspect, and bring the matter right down to the personal benefits to you, fuel conservation means this:—

- **Comfort and health from your fuel supply.**
- **Dollars saved for you this heating season, by taking steps to cut your fuel bill.**

Yes, this is something you should have done long ago. Turn over a new leaf today—your government *urges* it—you will *profit* by it!

## WHAT WE DO

● What we do can be expressed in four words: We cut *your fuel consumption!* How we do it could fill a whole volume. So we can only high light it in the limited space available.

First of all, consider the fact that your heating cost can be cut from 15 to 20% unless your plant is the *rare exception.* And this isn't simply our opinion; it's the concensus of all authoritative opinion based on extensive surveys of heating plants by unbiased observers.

Making this saving doesn't in most cases call for extensive changes or modernization. It simply involves making a careful check of all the little things that sabotage fuel—that waste 1% here and 5% there—that often add up to an amazing total.

A heavy film of soot on boiler surfaces, for example, can waste 6.6% of your fuel. Cleaning and adjusting oil burners, stokers, grates; putting radiator valves, vents and traps in good shape; adjusting damper regulators, thermostats and other controls; stopping leaks; checking circulators, condensation pumps and vacuum pumps; balancing system; cleaning or replacing furnace filters—these are simply typical of a thousand and one things that can be checked with profit to the owner in practically every heating plant.

Your heating plant is operated more hours than any device in your home with the exception of the electric clock. But it sits in the basement out of sight, out of mind, and therefore sadly neglected in a vast majority of cases. No wonder, then, that most people lose about one ton of coal out of 10, one gallon of oil out of 10, one therm of gas out of 10.

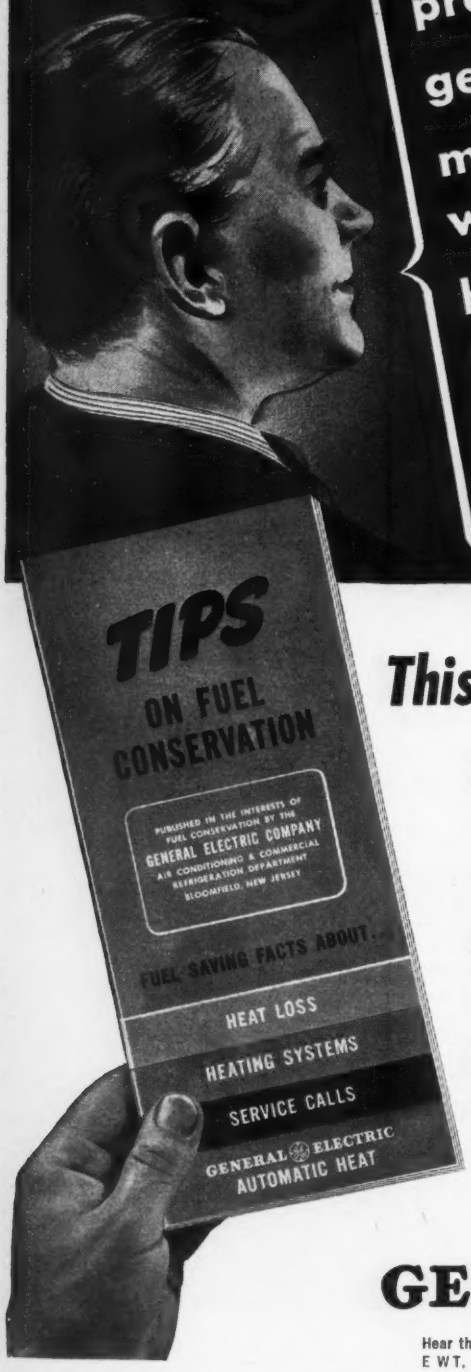
By proper use of fuel, the railroads cut fuel cost for freight haulage 34.7% since World War I. Public utilities cut theirs 59.6% in the last 30 years; the iron and steel industry has cut coal cost per ton of pig iron 20.9%. Yet in the domestic field the waste still goes on.

It should have been stopped, for your own good, long ago. Now it should be stopped, not only for your good, but because it meets the crying emergency of a nation at war! Let's talk it over.

Contributed to the cause of fuel conservation by McDonnell & Miller, Wrigley Building, Chicago

# LOOKING FOR WAYS TO

prepare for post-war business?
get more service agreements?
make new contacts with home-owners?
help your customers make the most of fuel supplies?
do your part in fuel conservation?




## *This G-E booklet will help you!*

HERE'S the handy 40-page booklet that is helping G-E Dealers to keep the good-will of their customers . . . to make new contacts and clinch more service agreements . . . to lay a sound foundation for post-war business.

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This booklet is one part of General Electric's program to protect its dealers. Advertising in American Home and Better Homes & Gardens—featuring the booklet—is another part. Make the most of these helps . . . call your G-E Automatic Heating Distributor today for a supply of "Tips on Fuel Conservation."

*General Electric Company, Heating Division 34812, Bloomfield, New Jersey.*

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# Light Oil for Heavy

## Industrial Distillate Demand Up While Residual Is Saved

Now that the campaign to save fueloil by converting plants to coal is over, an appraisal of its results and effects is called for. It is too early for a final accounting, as the basic data needed are scattered, much being in government agency files, and nobody has the time or authority to collect and analyze the complete set of facts. A recent survey, however, of 821 manufacturing companies operating 911 plants in two states of the industrial East permits at least a preliminary study of what happened to these factories during the conversion campaign spanning the fifteen months from June 1942 to September 1943. The study reveals how greatly these plants depend on fueloil for processing and steam raising; it explains in part too the reason for the anomalous residual oil surplus which suddenly developed in the East last summer.

Pre-war, the 821 companies made everything from safety pins to superchargers. Being in the East, a rather expensive gondola car haul from the soft coal mine tipples, many had willingly helped to create a volume market for water-borne fuel. More than one bulk handler of industrial oils had risen to opulence keeping their storage filled. Then came the day when only some tankers docked in familiar harbors; followed by the darker day when none ventured even to leave its loading port on the Gulf. Choked with important war orders, these plants faced shutdowns. Conversion to coal was the only way out for many.

But the job was not done without upsetting some old balances in fueloil marketing. In the twelve months from June 1, 1941 through May 31, 1942, this group of plants used 168,345,112 gallons of fueloil. In the 1942-43 year consumption dropped 13.5% to 145,558,589 gallons. This year, 1943-44, estimated use will be down to 124,552,156 gallons, 26.0% below 1942-43. Reference to the accompanying tables, however, shows that this two year drop of 43,792,956 gallons* in fueloil requirements was the net volume loss for suppliers in the two states. Sales

### Oil Used for Raising Steam

| Grade of Oil | 1941-42 Plants | 1941-42 Gallons | 1942-43 Plants | 1942-43 Gallons | 1943-44 Plants | 1943-44 Gallons |
|---|---|---|---|---|---|---|
| No. 1 | 18 | 31,612 | 25 | 34,928 | 22 | 38,020 |
| No. 2 | 216 | 3,314,288 | 228 | 2,480,491 | 149 | 1,517,877 |
| No. 3 | 35 | 509,313 | 41 | 453,928 | 20 | 147,320 |
| No. 4 | 30 | 718,298 | 29 | 479,613 | 15 | 193,300 |
| No. 5 | 100 | 4,072,574 | 92 | 2,388,305 | 40 | 998,170 |
| No. 6 | 160 | 87,364,241 | 153 | 63,169,694 | 113 | 33,422,124 |
| Nos. 2 & 3 | 0 | 0 | 1 | 9,287 | 0 | 0 |
| Nos. 1 & 2 | 0 | 0 | 1 | 1,125 | 0 | 0 |
| Nos. 2 & 5 | 1 | 11,532 | 2 | 19,804 | 1 | 7,515 |
| No. Using | 560 | 96,021,858 | 572 | 69,037,175 | 360 | 36,324,326 |
| No. Plants Involved | 531 | | 532 | | 313 | |

### Percent of Plants Using Each Grade of Oil for Steam Raising

| Grade of Oil | 1941-42 No. of Plants | 1941-42 % of Total | 1942-43 No. of Plants | 1942-43 % of Total | 1943-44 No. of Plants | 1943-44 % of Total |
|---|---|---|---|---|---|---|
| No. 1 | 18 | 3.39 | 25 | 4.70 | 22 | 7.03 |
| No. 2 | 216 | 40.68 | 228 | 42.86 | 149 | 47.60 |
| No. 3 | 35 | 6.59 | 41 | 7.71 | 20 | 6.39 |
| No. 4 | 30 | 5.65 | 29 | 5.45 | 15 | 4.79 |
| No. 5 | 100 | 18.83 | 92 | 17.29 | 40 | 12.78 |
| No. 6 | 160 | 30.13 | 153 | 28.75 | 113 | 36.10 |
| Nos. 2, 3 | 0 | 0 | 1 | 0.19 | 0 | 0 |
| Nos. 1, 2 | 0 | 0 | 1 | 0.19 | 0 | 0 |
| Nos. 2, 5 | 1 | 0.19 | 2 | 0.38 | 1 | 0.32 |
| | 531 | | 532 | | 313 | |

Note: Some plants use more than one grade, hence the figures in the "No. of Plants" columns add to more than the totals shown.

### Oil Used for Processing Furnaces

| Grade of Oil | 1941-42 Plants | 1941-42 Gallons | 1942-43 Plants | 1942-43 Gallons | 1943-44 Plants | 1943-44 Gallons |
|---|---|---|---|---|---|---|
| No. 1 | 110 | 1,453,699 | 129 | 1,812,199 | 129 | 2,025,292 |
| No. 2 | 123 | 24,819,218 | 151 | 36,086,041 | 159 | 52,699,303 |
| No. 3 | 27 | 9,027,996 | 23 | 7,844,559 | 24 | 9,301,211 |
| No. 4 | 34 | 8,555,032 | 15 | 3,175,264 | 17 | 3,491,390 |
| No. 5 | 14 | 2,670,804 | 15 | 3,627,116 | 14 | 4,237,874 |
| No. 6 | 7 | 13,493,498 | 5 | 11,862,376 | 5 | 12,632,962 |
| No. 7 | 17 | 6,580,964 | 12 | 2,575,829 | 12 | 2,834,510 |
| Diesel | 1 | 53,655 | 0 | 0 | 0 | 0 |
| Nos. 2, 3, 4 | 3 | 4,574,149 | 0 | 0 | 0 | 0 |
| Nos. 3, 4 | 1 | 217,960 | 1 | 43,779 | 1 | 46,500 |
| Nos. 3, 5 | 1 | 205,000 | 0 | 0 | 0 | 0 |
| No. 2 & Diesel | 25 | 489,553 | 31 | 602,551 | 27 | 718,002 |
| No. 3 & Diesel | 3 | 109,721 | 1 | 56,786 | 1 | 56,786 |
| No. 4 & Diesel | 2 | 72,005 | 0 | 0 | 0 | 0 |
| Nos. 2, 3 | 0 | 0 | 4 | 8,613,914 | 0 | 0 |
| Nos. 1, 2, 3 | 0 | 0 | 1 | 221,000 | 1 | 184,000 |
| No. Using | 368 | 72,323,254 | 388 | 76,521,414 | 390 | 88,227,830 |
| No. Plants Involved | 316 | | 325 | | 325 | |

of some grades actually increased during the period, while other grades declined.

The combined light oil requirements for processing and steam raising have advanced steadily, as the increased processing needs have more than offset the lowered requirements for steam raising. Light oil volume rose from 54,163,031 gallons in 1941-42 to 61,935,269 gallons in 1942-43 and to 70,426,516 gallons for the current year, an overall rise of 30.0%. Meanwhile, the combined use of residual oils dropped from 114,182,087 gallons to 83,623,320 gallons and again to 54,125,640 gallons, an overall drop of 52.6%. In other words, in two years the fueloil demands of these manufacturing plants shifted from predominantly residual to predominantly distillate. Under the relatively rigid restrictions imposed by the PAW allocation system, this change in demand partly explains why distillate supplies in the two states have been more critical than residual supplies these last few months. Allocations by grades did not vary according to demand changes; they did not immediately take into account the fact that, for manufacturing plants alone, the residual requirements of these two states had dropped 50,000,000 gallons a year while distillate demand had increased over 16,000,000 gallons.

It is clear from the tables that industrial processing furnaces have not only not been converted to coal, as a general rule, they have been pushed nearer their maximum capacities. And some new oil-fired furnaces have been added. Since 1942 only nine plants using oil for processing have been changed to other fuels and their annual consumption was only about 500,000 gallons a year. In contrast, nine old plants switched from other fuels to oil in the same period and seven new oilburning process plants were put into operation. The annual oil consumption of the sixteen additional plants using oil greatly exceeds the small consumption of the plants converted. The greater control which can be exercised over an oil fire and the extreme difficulty of converting processing plants to coal (usually they have to be replaced rather than refitted to burn coal) explains the by-passing of processing furnaces by the campaign.

Steam raising boilers, including those

(*Continued on page 53*)

*At an average price of 6¢ a gallon, this loss amounted at retail to over $2,500,000.

### Percent of Plants Using Each Grade of Oil In Processing Furnaces

| Grade of Oil | 1941-42 No. of Plants | 1941-42 % of Total | 1942-43 No. of Plants | 1942-43 % of Total | 1943-44 No. of Plants | 1943-44 % of Total |
|---|---|---|---|---|---|---|
| No. 1 | 110 | 34.81 | 129 | 39.70 | 129 | 39.70 |
| No. 2 | 123 | 38.92 | 151 | 46.46 | 159 | 48.92 |
| No. 3 | 27 | 8.54 | 23 | 7.08 | 24 | 7.38 |
| No. 4 | 34 | 10.76 | 15 | 4.61 | 17 | 5.23 |
| No. 5 | 14 | 4.43 | 15 | 4.61 | 14 | 4.31 |
| No. 6 | 7 | 2.22 | 5 | 1.54 | 5 | 1.54 |
| No. 7 | 17 | 5.38 | 12 | 3.69 | 12 | 3.69 |
| Diesel | 1 | 0.32 | 0 | 0 | 0 | 0 |
| Nos. 1, 2, 3 | 0 | 0 | 1 | 0.31 | 1 | 0.31 |
| Nos. 2, 3 | 0 | 0 | 4 | 1.23 | 0 | 0 |
| Nos. 2, 3, 4 | 3 | 0.95 | 0 | 0 | 0 | 0 |
| Nos. 3, 4 | 1 | 0.32 | 1 | 0.31 | 1 | 0.31 |
| Nos. 3, 5 | 1 | 0.32 | 0 | 0 | 0 | 0 |
| No. 2 & Diesel | 25 | 7.91 | 31 | 9.54 | 27 | 8.31 |
| No. 3 & Diesel | 3 | 0.95 | 1 | 0.31 | 1 | 0.31 |
| No. 4 & Diesel | 2 | 0.63 | 0 | 0 | 0 | 0 |
| | 316 | | 325 | | 325 | |

Note: Some plants use more than one grade, hence the figures in the "No. of Plants" columns add to more than the totals shown.

### Percent of Each Grade of Oil Used for Steam Raising

| Grade of Oil | 1941-42 Gallons | 1941-42 % of Total | 1942-43 Gallons | 1942-43 % of Total | 1943-44 Gallons | 1943-44 % of Total |
|---|---|---|---|---|---|---|
| No. 1 | 31,612 | 0.03 | 34,928 | 0.05 | 38,020 | 0.10 |
| No. 2 | 3,314,288 | 3.45 | 2,480,491 | 3.59 | 1,517,877 | 4.18 |
| No. 3 | 509,313 | 0.53 | 453,928 | 0.66 | 147,320 | 0.40 |
| No. 4 | 718,298 | 0.75 | 479,613 | 0.69 | 193,300 | 0.53 |
| No. 5 | 4,072,574 | 4.24 | 2,388,305 | 3.46 | 998,170 | 2.75 |
| No. 6 | 87,364,241 | 90.98 | 63,169,694 | 91.50 | 33,422,124 | 92.01 |
| Nos. 2, 3 | 0 | 0 | 9,287 | 0.01 | 0 | 0 |
| Nos. 1, 2 | 0 | 0 | 1,125 | .. | 0 | 0 |
| Nos. 2, 5 | 11,532 | 0.01 | 19,804 | 0.03 | 7,515 | 0.02 |
| | 96,021,858 | 100.00 | 69,037,175 | 100.00 | 36,324,326 | 100.00 |
| Light Oil | 4,585,043 | 4.78 | 3,479,176 | 5.04 | 1,904,032 | 5.24 |
| Residual | 91,436,815 | 95.22 | 65,557,999 | 94.96 | 34,420,294 | 94.76 |

Gain or loss compared with 1941-42

| | 1942-43 | 1943-44 |
|---|---|---|
| Distillate | —24.12 | —58.47 |
| Residual | —28.30 | —62.36 |
| | —28.10 | —62.17 |

### Percent of Each Grade of Oil Used in Processing Furnaces

| Grade of Oil | 1941-42 Gallons | 1941-42 % of Total | 1942-43 Gallons | 1942-43 % of Total | 1943-44 Gallons | 1943-44 % of Total |
|---|---|---|---|---|---|---|
| No. 1 | 1,453,699 | 2.01 | 1,812,199 | 2.37 | 2,025,292 | 2.30 |
| No. 2 | 24,819,218 | 34.32 | 36,086,041 | 47.16 | 52,699,303 | 59.73 |
| No. 3 | 9,027,996 | 12.48 | 7,844,559 | 10.25 | 9,301,211 | 10.54 |
| No. 4 | 8,555,032 | 11.83 | 3,175,264 | 4.15 | 3,491,370 | 3.96 |
| No. 5 | 2,670,804 | 3.69 | 3,627,116 | 4.74 | 4,237,874 | 4.80 |
| No. 6 | 13,493,498 | 18.66 | 11,862,376 | 15.50 | 12,632,962 | 14.32 |
| No. 7 | 6,580,964 | 9.10 | 2,575,829 | 3.37 | 2,834,510 | 3.21 |
| Diesel | 53,655 | 0.07 | 0 | 0 | 0 | 0 |
| Nos. 1, 2, 3 | 0 | 0 | 221,000 | 0.29 | 184,000 | 0.21 |
| Nos. 2, 3 | 0 | 0 | 8,613,914 | 11.26 | 0 | 0 |
| Nos. 2, 3, 4 | 4,574,149 | 6.32 | 0 | 0 | 0 | 0 |
| Nos. 3, 4 | 217,960 | 0.30 | 43,779 | 0.06 | 46,500 | 0.05 |
| Nos. 3, 5 | 205,000 | 0.28 | 0 | 0 | 0 | 0 |
| No. 2 & Diesel | 489,553 | 0.68 | 602,551 | 0.79 | 718,002 | 0.81 |
| No. 3 & Diesel | 109,721 | 0.15 | 56,786 | 0.07 | 56,786 | 0.06 |
| No. 4 & Diesel | 72,005 | 0.10 | 0 | 0 | 0 | 0 |
| | 72,323,254 | 100.00 | 76,521,414 | 100.00 | 88,227,830 | 100.00 |
| Light Oil | 49,577,988 | 72.17 | 58,456,093 | 76.39 | 68,522,484 | 77.67 |
| Residual | 22,745,266 | 27.83 | 18,065,321 | 23.61 | 19,705,346 | 22.33 |

Gain or Loss compared with 1941-42

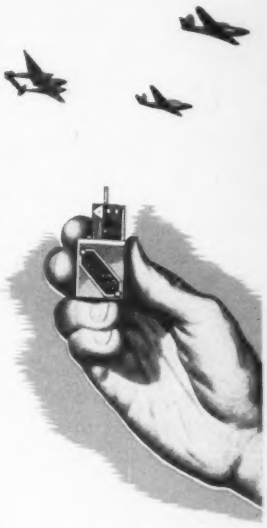
| | 1942-43 | 1943-44 |
|---|---|---|
| Light Oil | +17.91 | +38.21 |
| Residual | —20.58 | —13.36 |
| | + 5.80 | +21.99 |

# When so much depends on things so little . . .

Cruisers and carriers standing off shore . . . bomber and fighter planes snarling overhead . . . barges disgorging troops and guns and rumbling tanks . . . that's invasion, today!

Yet important in the control of this huge mechanized invasion force are thousands of little electric motors—some that weigh but a few ounces. Motors that swing gun turrets and operate range finders . . . that keep radio tubes cool . . . that tell pilots if ailerons and wing flaps and stabilizers are working—and whether bombs are away or landing gear down.

Long a leader in building small motors, Delco Appliance is proud of the part its precision-built products are playing in this highly *motorized* war. The sum of perfection in little things is a tremendously big thing, as the Axis is discovering.





## There's a Great Day Coming!

The little things that have always helped Delco Appliance home and farm equipment contribute so much to better living will contribute still more when the "great day" of peace comes. Until then, *"Victory Is Our Business"*.

More than a million Delco Appliance Motors are now performing a host of specialized war jobs. Some of the equipment in which they are used includes:

*For Aircraft:* Instruments, Control Devices, Bombsights, Automatic Pilots, Gyroscopic Gun Sights, Gun Chargers, Gun Computers, and Aerial Cameras.

*Among other uses are motors for:* Automatic Radio Tuners, Portable Field Radio Transmitters, Antiaircraft Gun Directors, Tank Sirens, and Diesel Engine Starters.

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fueloil & oil heat

# Keeping 'em Rolling

## Fundamentals of Electric Motor Testing and Service

By
J. W. Schulz

*New electric motors of proper specifications are hard to get in wartime, and there are fewer men available today to keep the old motors in operation. In this, and other articles to come, Mr. Schulz presents the rudiments of service and methods of testing the various types of electric motors in common service on heating equipment and domestic appliances. Old timers as well as new servicemen will find much in these articles they can use in customers' basements.*

ANYONE who works on sick oilburners may run into motor trouble, and unless he has a motor specialist with him at all times, or carries a flock of spare motors, he'd better know all about motor first aid.

A complete knowledge of motors used for modern heating equipment covers these types:

1. *Split phase motors*
2. *Repulsion-induction motors*
3. *Capacitor-start induction-run motors*

These first three types are the two-wire-feed motors used on more than 95% of domestic oilburners, stokers, blowers and circulators for forced hot water heating plants.

4. *Universal motors*

In the oil heating industry, this type is used mainly where exceptionally high speeds (5,000 to 10,000 rpm) are needed. It is used rarely, only in a few very special models of oil burners, wall pumps, etc.

5. *Shaded pole or shading coil motors*

Sometimes called the toy type motors, these are used mainly in very small sizes, to operate for example the forced-draft fans of small vaporizing burners, or to open and close dampers or control valves, where the motor uses but 15 to 40 watts or less and relatively low motor efficiency can be tolerated.

6. *Special capacitor types, other than the capacitor-start induction-run*

Seldom used in domestic heating equipment, these include capacitor-start capacitor-run motors, the capacitor-equipped version of shading coil motors, and motors which have capacitors together with means for varying the motor speed or having the motor operate automatically at either of two preselected speeds. This type promises to become increasingly popular for special applications.

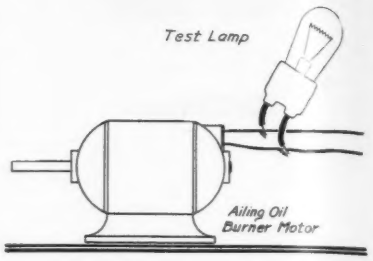
7. *Polyphase motors*

These are encountered mainly on large installations of commercial and industrial burners, oil pumps, blowers, etc., where motors ½ hp. and larger are used and two-phase or three-phase electric current is available. These motors use three or four feed wires instead of the two feed wires used for the single phase motors covered in items 1 to 6, and are started and stopped by special relays which provide overload protection and have a set of contacts for each feed wire to the motor.

A service man studying motors does well to concentrate first on the motors listed here in items 1, 2, and 3. If he services only pressure type domestic burners, he may have little need for knowledge of the other types.

### Locating Trouble

Ascertaining that there *is* motor trouble is not difficult. Wire a test lamp in parallel with the motor, at the motor terminals as Diag. 1 shows, and apply current to the motor. If the lamp lights but the motor does not turn over, be careful from then on not to apply current to the stalled motor for enough time to overheat the windings and damage the insulation. Watch for smoke from inside the motor. Feel it from time to time to determine if the current you apply for testing is heating it. By listening to the motor and feeling it when the current is on, find out if any current at all is going through it.




*Diag. 1*

Make sure the motor is not jammed or loaded too heavy to start. Spin it by hand with the current off. If you cannot turn over the motor of a pressure burner by reaching into the blower housing and pressing on the blower blades with one or two fingers, find out the reason for the heavy starting load and lighten it. Then try again to start the motor.

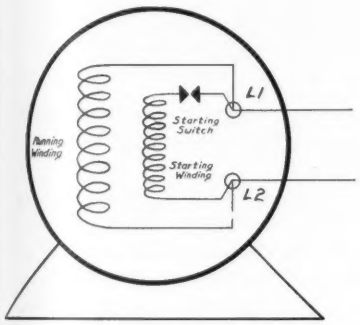
### Split Phase Motor

The split phase motor is in many cities the most popular type for powering domestic burners. It employs the rugged squirrel cage rotor which has no wire-winding, insulation, or commutator. It is made up of a combination of bars, plates, or castings fastened together in a heavy and rigid, metal-to-metal manner. Many service men prefer squirrel cage rotor motors, for these can give no commutator or brush trouble, and have no armature windings to cause short-circuits, open circuits, or to burn out. (This type rotor is used in five of the seven types of motors listed above.)

Diag. 2 shows the internal wiring of the split phase motor. With current on posts L1 and L2, current is on the running winding (or main winding). Usually the starting switch is operated by the action of centrifugal weights and springs. When the motor is idle, this switch is closed, giving current to the starting winding (or phase winding); when the motor shaft reaches about 75% of the

motor's normal operating speed, centrifugal action causes the starting switch to open; the starting winding has served its function in bringing the motor shaft up to speed and it is automatically disconnected. Servicemen need not worry about exact adjustments for the weights, springs, and starting contacts of split phase motors. Ordinarily, the big thing is to have the starting switch properly closed when the motor is at a standstill, and properly open when the motor is spinning at its normal working speed.

Examination of the starting switch of a split phase motor is an important and frequently needed service step. Some motors have a small cover plate that may be removed to check on the switches with the motors idle and running. With other motors, it is necessary to remove the end bell to examine the switch, and in a few




*Diag. 2 - Split Phase Motor*

cases it is necessary to remove additional parts. Care must be exercised, when motors are dismantled to examine and recondition starting switches, not to break parts of the switches. Rough handling may also damage the windings, break internal electrical connections, or ruin the small soft carbon blocks that form part of the starting switches of some motors.

To service a sick split phase motor, first see that the running winding is in good condition. With current on the motor, give the shaft a quick spin by hand. If the running winding is in good order (and there is no load or only a light load on the motor), the shaft will come up to speed and the motor will operate properly. Next, check the starting contacts, making certain that they close when the motor is idle. Very frequently, the only trouble lies in failure of the starting contacts to close properly when the shaft is at a standstill. The work necessary to cure this trouble is within the ability of a good mechanic, i.e., it is not work that must be done by a motor specialist or an electrical engineer, for generally it consists of cleaning dirt, gum, and excessive lubricating oil from starting switch parts, or smoothing pitted contacts, or freeing parts that tend to stick in one position or another.

If it has a burned-out running winding, a split phase motor will not start at all when you apply current to its terminals and give it a good spin by hand with no load on the shaft. If it has a burned-out starting winding, it will not start by itself even though the starting switch is properly closed when the motor is idle.

Ruggedness and low price are advantages of the split phase motor. Its disadvantage lies in poor starting characteristics. That is, it cannot be used for applications which impose a heavy standstill load on the motor, because it cannot exert a great torque as it makes its first few turns. It is properly used for driving small light oil pumps, blowers, etc. that permit the motor to come up to nearly full speed before it handles its full load. It should not be used to drive air compressors, stokers, refrigerators, and other equipment that may call for the motor to do heavy work on its first half turn or so. And, though its starting power is relatively feeble compared to other motors, the split phase motor draws considerable current for starting. In larger sizes it tends to cause voltage and house lights to dip down when it starts. For this reason, many power companies object to split phase motors larger than 1/4 or 1/3 hp. being connected to their lines, and in many areas the custom is to use another type motor for connection to lighting lines where a motor larger than 1/6 hp. is needed.

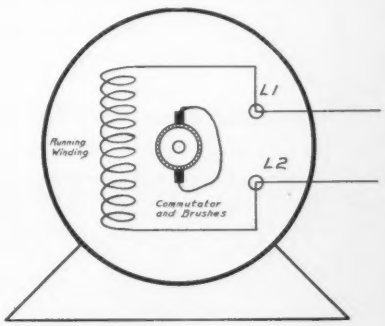
### Repulsion-Induction Motor

The characteristics of the repulsion-induction motor are opposite to those of the split phase motor. The most costly motor used for driving small equipment, it provides the high starting torque that is needed to roll the most stubborn loads from a standstill; it does well at handling a piston type air compressor or water pump which makes the motor "lean on the load" from the instant it tries to turn over, thus it is the motor to use for heavy dead loads and exceptional break-away loads. At the same time, this type motor is kind to the voltage on starting. It does not tend to dim the lights. Common practice permits the use of sizes up to ½ hp., and sometimes larger, on light circuits.

As it has "the starting torque of a series-wound Direct-Current motor," to use one student's way of putting it, "because it is a Direct-Current motor when it starts," it is not surprising that if you examine a repulsion-induction motor you will find that it has a wire-wound armature and a commutator and brushes similar to, for example, those of the starting motor in an automobile.

Diag. 3 shows the electrical layout. There is a running winding similar to that of a split phase motor. Two brushes are shown, connected to each other only. There is no electrical connection between the brushes and commutator circuit and the field winding.

The brushes and commutator serve only to bring the motor shaft up to speed. At roughly 75% of the motor's normal running speed, a centrifugal device goes into action to short-circuit the commutator and thus turn the armature into the equivalent of a squirrel cage rotor. In some motors, a spring and cone arrangement inside a hollow commutator connects every segment of the commutator to every other segment. In others, the commutator is short-circuited at only a certain number of places, i.e., four shoes may be used to provide a common connection to eight points in the commutator. As can be learned very easily by watching them in operation, some repulsion-induction motors are of the brush-




*Diag. 3 - Repulsion - Induction*

lifting type. Spring tension on their brushes is relieved when the motors come up to speed, and the brushes no longer touch the commutator. Do not mistake this as necessary for the proper handling

of the motor load, however, for the brushes lift only to save the commutator and brushes from wear they would receive in normal operation if the brushes did not lift. In the brush-riding type of motor, the handling of the load, and the electrical characteristics of the motor, are identical to those of the brush-lifting type.

Care of the brushes and commutator is a regular service procedure with this type motor. Don't make the mistake of reaching for the sandpaper and applying it energetically to every commutator you find in need of attention. Instead, first try to clean the commutator and brushes thoroughly, using only clean cloth and perhaps a solvent. Use the cloth on a stick of wood, to polish the commutator while the motor is running. Certain silver or brass polish is used sometimes to excellent advantage. When such treatment brings out a clean, polished commutator with shiny, smooth copper segments, it is decidedly inadvisable to go to work with the sandpaper and risk runining an already good commutator surface by forming ridges and exposing raw, unhardened, bright copper.

You may have to clean out the spaces between the segments of the commutator, using a hardwood splint, if dirt and gum or carbon from the brushes have filled these spaces and prevent proper continuous contact of the brushes with the copper of the commutator. You may have to free the brushes so they do not stick in their holders. Slight adjustment may be needed for the springs supposed to make the brushes bear properly on the commutator. Also, replacement of brushes is in order from time to time for certain motors; it is well to have spares on hand.

The centrifugal weight, or governor, action may need attention. Gum, dirt, or excessive lubricating oil will cause it to perform erratically and must sometimes be removed by washing with a solvent or careful rubbing off with cloth. The contacts of the device that short-circuits the commutator as the motor comes up to speed may need cleaning, or sandpapering to eliminate irregularities caused by arcing and pitting.

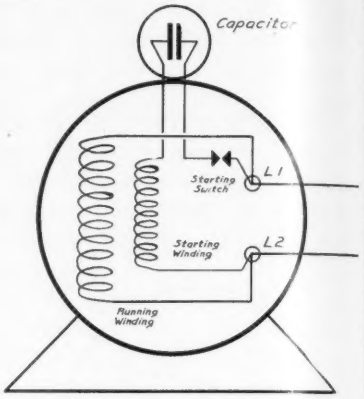
Occasionally a repulsion - induction motor will be found speeding up, then slowing down, and continuing in this cycle. The cause may be overloading, low voltage, or improper action of the centrifugal weights (throwing out of the weights at too low a speed may cause the trouble, and the remedy is to increase the spring tension that makes the weights take their idle-motor position).

To reverse the direction of rotation of this type motor, the entire brush assembly is shifted to bring the brushes to a different position. Marked points in some motors show proper brush locations for each direction. In an emergency, the brushes may be left temporarily in the position that starts the motor in the proper direction and gives no excessive sparking of the brushes as the motor comes up to speed. With the brushes in the proper position, the motor will develop its full starting torque. Another method used in emergencies is to find the two locations for the brushes which give no tendency for the motor to start. Mark these. Set the brushes midway between them and try starting the motor with normal starting load. If this gives satisfactory starting without excessive brush sparking, leave the brushes in this position. If not, alter the brush position slightly to try to adjust for less sparking. Try to avoid the error, however, of shifting the brush location when you should not. The chances are greater than 99 out of 100 that the brushes are in their proper position and that poor starting is caused by sticking brushes, a dirty commutator, low voltage, or overloading on the start. To judge from their actions, some servicemen have the impression that "adjustments" are needed from time to time for the brush locations of this type motor, whereas actually this is not so. If the brushes are in the wrong position, they should be placed in the proper position as recommended by the motor manufacturer, and from then on they should not be moved unless it is desired to reverse the rotation.

### Capacitor Start Motors

"A capacitor motor is a split phase motor with a tin can on top of it," said a student in reply to an examination question, "and in every respect it falls midway between a split phase motor and a repulsion induction motor." The student's ideas of a capacitor-start induction-run motor were based on sound knowledge.

In first cost, the capacitor-start motor is lower in price than a repulsion-induction motor, yet appreciably higher than a split phase motor. The capacitor-start motor can handle a heavier starting load by a good margin than a split phase motor, thus is a favorite now for stokers and refrigerators, yet it does not give the admirable dead-load torque of the repulsion-induction motor. As for starting current and tendency to dim the lights, again the capacitor-start motor strikes a medium.




Diag. 4-Capacitor-Start

Diag. 4 shows the internal wiring of a motor of this type and reveals the similarity to the split phase motor shown in Diag. 2. Both have running and starting windings, but the starting winding in Diag. 4 is matched to the capacitor and is dependent on it for proper operation. The capacitor-start induction-run motor, like the split phase, has the rugged and troublefree squirrel cage rotor which has been described.

Practically all that has been said about shooting trouble on split phase motors applies also to capacitor-start motors. The starting switch must function properly; if it sticks open, the motor will start only if given a spin by hand while there is no load or a light load on it. The hand-start method is used to check on the condition of the starting equipment and the running winding. In the case of the capacitor-start motor, however, the starting equipment includes the capacitor. If this is defective, the motor will not start or its starting ability will be impaired.

Oil burner service men in some companies make quite a fuss about the mysteries of the capacitor or condenser of this type motor, and often seem unable to make much headway in the field to-

(Continued on page 56)

## U. S. BULLETIN ★ DECEMBER

# WINNING THE WAR COMES FIRST!

**Men and materials** have gone to war. U. S. Radiator and Pacific Steel Boiler are today helping in the production of vital war material. Until this war is won, that is our foremost job.

**Serious delays** in production schedules, and uncertainties of delivery dates on even the most essential civilian equipment, are understandable under present abnormal conditions. But we should like to go on record that we are bending every effort to give you the best service possible consistent with the primary demands of our country.

**Please feel free** to write us regarding your problems. Let us work with you now and plan with you for the future when normal service can be resumed.

### U. S. RADIATOR IN THE WAR

**Magnesium Castings** for U. S. war planes are in production in one unit of U. S. Radiator Corporation. Use of light metal alloys is one of the most important developments in the air war today.

**Prefabricated Ship Hull Sections** for U. S. Maritime Cargo Vessels are being built by Pacific Steel Boiler Division of U. S. Radiator. This Division is also making gun mounts, foundations and platforms.

US RADIANT WARMTH

Member The Institute of Boiler and Radiator Manufacturers

## UNITED STATES RADIATOR CORPORATION

AND

## PACIFIC STEEL BOILER DIVISION

Detroit, Michigan · Branches and Sales Offices in Principal Cities

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# Engineered Changes for a Heavy Oil Installation

MANY owners of commercial and industrial burners that use No. 5 oil tend to lean towards the use of No. 6 oil even in normal times. The heavier grade has a few per cent more heat per gallon. Much more important, it usually costs less than No. 5, thus it lowers fuel bills. Right now there is an additional incentive to switch from No. 5 oil to No. 6. Light No. 5 suitable for a given plant may not be available when heavier No. 5, or No. 6 oil, may be. An installation that can burn heavy No. 6 oil at high efficiency can be tuned for any of a wide variety of lighter oils.

The burners shown in Diag. 1 were installed more than ten years ago to burn No. 5 oil. In recent years they gave trouble that could, it seemed, be ended by begging the supplier to "send a load of oil lighter than your last No. 5." This, plus uneasiness about the continued availability of the special No. 5 oil the burners seemed to prefer, made the owner anxious to change the plant to digest the heaviest No. 6.

A study of a commercial or industrial installation, made preparatory to planning changes to switch to heavier oil, must match the particular oilburners, appurtenances, and boiler room layout. The changes must in every instance, however, provide for: First sufficient heating for the oil that flows through the circuit of the suction line, oil pump, and return line. With proper heating of this oil and proper heavy oil equipment and pipe sizes, the vacuum at the pump inlet will be acceptably low and the back pressure given by the return line will not be too high. Dependable oil pressure and circulation will be given by the pump. Second, the changes must provide for sufficient heating for the oil to be properly atomized.

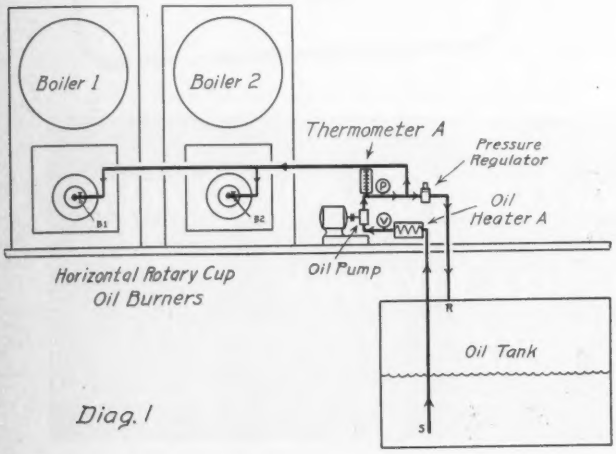
The pressure regulator (see Diag. 1) on this installation was set at 25 psi for No. 5 oil, high enough to permit good regulation of fire sizes using valves B1 and B2. The gauge marked P reports on this pressure. To fire the boilers, the pump set is started with valves B1 and B2 closed. Next, a burner motor is started. A lighted torch is held in the firebox, its flame near the burner, and the oil is turned on by using the valve (B1 or B2). The fire size, draft, and primary and second air rates are adjusted manually to match the load and produce good combustion. Each burner is rated at about 35 gph; each of the high pressure boilers is rated at 75 hp. The belt-drive heavy oil pump set is in duplicate, though for simplicity but one pump is shown in the diagram, and each pump will handle about 150 gph.

Vacuum gauge V, shown in the drawing at the pump inlet, was installed to provide data about changes needed to switch to heavier oil. With the plant running normally on No. 5 oil and thermometer A reading 98°F. (manually controlled oil heater A turned on fully), the vacuum at the pump inlet was 14". The suction line, of 1" pipe and about 50 ft. long, was judged none too large for real No. 5 oil. A maximum suction line vacuum of about 10" would have been better. Combustion was checked using No. 5 oil. With a trace of chimney smoke the $CO_2$ was 12.2%, the stack temperature 470°F. with a fire size the firemen declared large enough for maximum load.

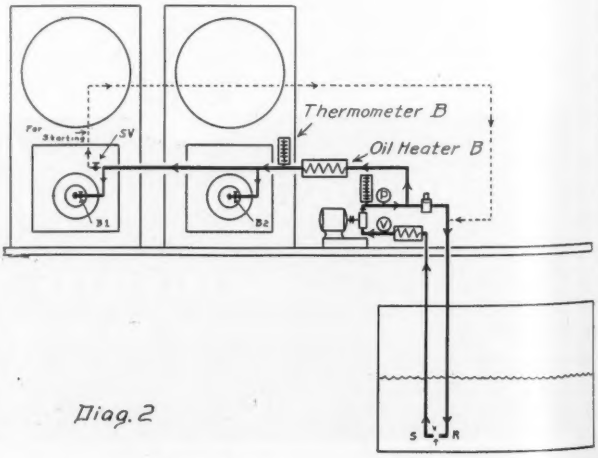
### Mixed Oils

Next, and just for the tests, to the 400 gallons of No. 5 oil in the tank ,750 gallons of No. 6 was added, giving 65% No. 6 oil, 35% No. 5. The burners used this mixture for two days before additional tests were made, for time was needed to insure thorough mixing of the oils in the tank and steadying of thermometer A after the delivery of hot No. 6 oil. Using this mixture of Nos. 5 and 6 oils, the installation showed 21½" vacuum at the pump inlet, judged to be excessive. Suction line air leaks caused the fire to splutter and the needle of the pressure gauge to dip slightly from time to time. The load was carried wtih difficulty. Chimney smoke came with 7.0% $CO_2$ and the stack temperature was 585°F. The mixture was not being heated sufficiently, with thermometer A hovering around 100°F., for good atomization. The pump condition was checked by operating the pump with the burners off and with the suction line valve closed. A maximum inlet vacuum of 26" was obtained and from this the pump was judged to be in at least fair condition.

Plainly, larger suction and return lines would be needed for No. 6 oil. It was concluded also that the pump set could handle No. 6 oil properly heated; that



Diag. 1



Diag. 2

*Maintaining a Valuable and Useful Tradition*

# THE JANUARY STATISTICAL & REVIEW ISSUE

## YEAR BOOK

ADVERTISERS will find this Annual a widely consulted Issue. It is a proper place for your message to this field, which is so actively working for Victory by supporting the Fighting Front—with materials and men—and serving the Home Front.

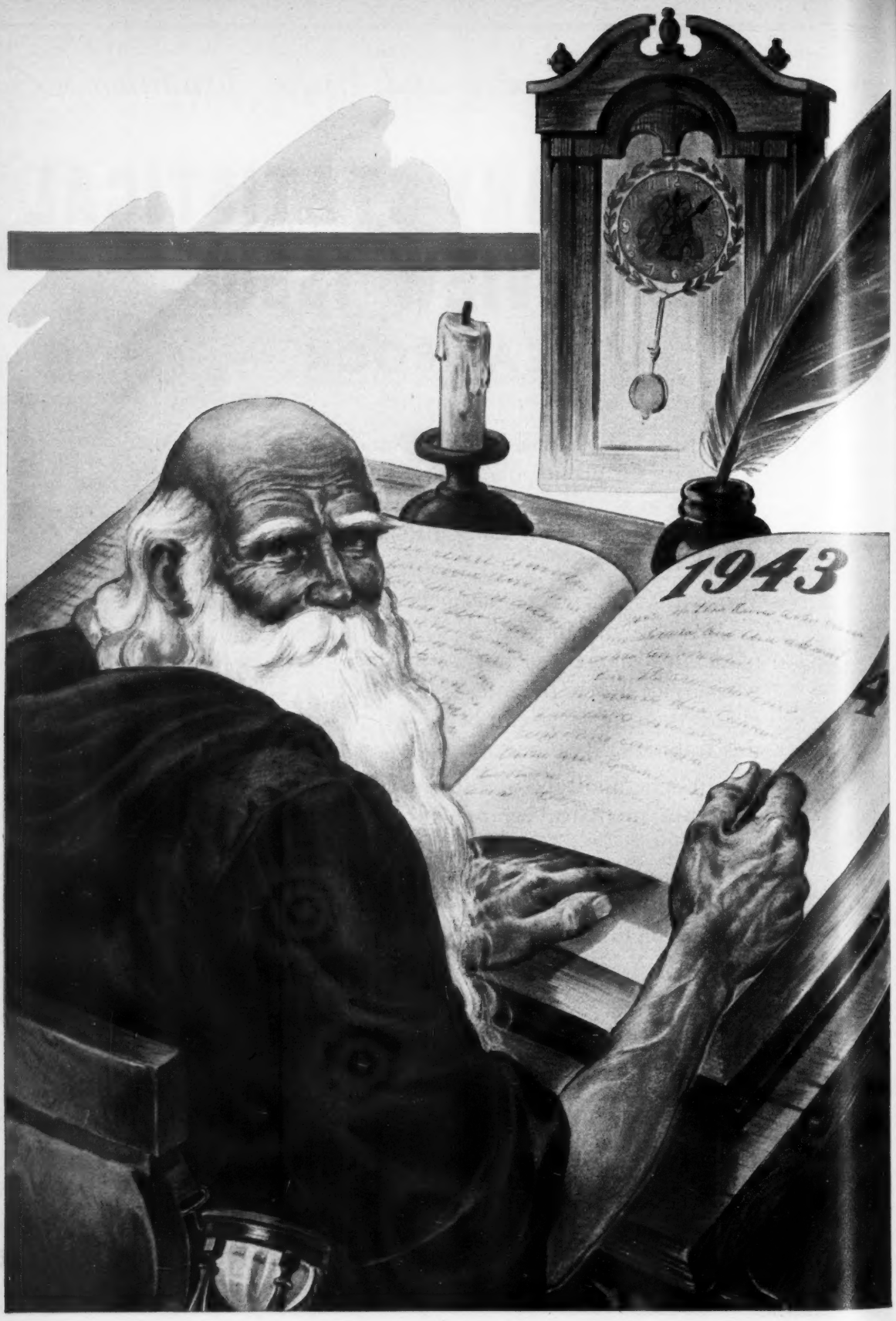
With priority and replacement orders being placed by dealers and manufacturers, — with post-war plans being made, this is an excellent time to place your name, product and service before the industry. Your co-operation with all elements in the field can be shown by your advertising in this traditionally important Issue.

It will contain all the useful data on industry operations in 1943, plus analytical reports on current trends and Government activities. The JANUARY ISSUE will bring you a complete picture of oilheating, fueloil and airconditioning, with the pertinent facts and figures that give all readers the industry picture needed for January, 1944, jobs and plans.

**Press Time : January 3rd.**

# FUELOIL & OILHEAT

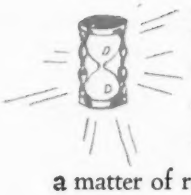
**232 Madison Ave.** **New York City, 16**


1943

## A Time for Considering

# The Blank Pages

## In Father Time's Book



In this, the heating industry's most trying year, dealers and service men everywhere can tell Father Time what to enter on the 1943 page of his book on Perfex-built controls. Their dependability and freedom from service troubles is once more a matter of record.

But that book of Father Time's still contains many blank pages. With the closer approach of the day when we've all finished our war jobs, Perfex is planning the stories which will appear on those pages.

Those plans concern your future as well as ours. Just as Perfex-built controls have made your job easier in the past, so will our even better products help you in the years to come. And if you haven't found out about them through past experience, it will pay you to investigate Perfex-built controls before making your new start in the business of a world at peace.

## PERFEX CORPORATION

*408 W. Oklahoma Ave.* *Milwaukee 7, Wisconsin*

fueloil & oil heat

higher temperatures were needed for good atomization of No. 6 oil; and that combustion would be good with properly atomized No. 6 oil since the good fireboxes, fairly air-tight boilers, and proper regulation of draft and primary and secondary air permitted achieving good combustion using No. 5 oil.

Diag. 2 shows the changes made in the scheme of the piping. The old 1" suction and return lines were replaced by 2" lines, and a 2" line was installed to the inlet of the new oil heater marked B. To increase the effectiveness of the suction line heater, the return line was piped to the bottom of the oil tank and tees facing each other were installed on the suction line and return line. With 150 gph handled by the pump and 60 gph burned, suction line inlet S receives 90 gph of hot oil from return line outlet R facing it, and 60 gph from the tank. With the steam valve of the suction line heater closed somewhat, thermometer A now reads 125°F. and the vacuum gauge shows 8" to 10" with the burners using No. 6 oil.

The new oil heater, B in Diag. 2, can give readings as high as 180°F. from thermometer B in the line to the burners, and this gives combustion quality to equal to that obtained originally with No. 5 oil; 12.0% to 12.5% $CO_2$ with a trace of chimney smoke. The new line shown dotted in Diag. 2 was installed to permit easy starting after shut-downs. Opening valve SV (starting valve) before lighting the burners, and while the pump is running, circulates oil through the line from the pump to the burners. Provisions were made to permit installing an electric oil heater in the suction line to the oil pump, but to date this has not been installed and there has been no difficulty caused by the lack of it.

Making the careful study before arriving at recommendations about shifting to No. 6 oil won the confidence of the owner, who had become worried after listening to the easily arrived at recommendations of several men supposed to be experts at heavy oil problems. One man had declared that a new pump set, alone, would do the trick, with no changes to the piping. Another had declared that though some of the same burners had been sold to use No. 6 oil, actually they could not do this well regardless of the oil piping, pumps, and oil heaters connected to them. Facts that can be collected by careful testing of an actual installation can, under these circumstances, pave the way to recommendations an engineer can back up with conviction, and to the results the owner desires. Proper handling of such problems may pave the way also to contracts for 100% modern installations to be made after the war has been won.

# Vinson Report Refuses Oil Price Rise; Asks More Supply

In one of the most exhaustive studies of the current petroleum situation that has been compiled, Director of Economic Stabilization, Fred M. Vinson, on October 29 denied the request of Petroleum Administrator Ickes that crude prices be increased 35 cents a barrel. The request for the increase had twice been refused by the Price Administrator. Judge Vinson's discussion covered more than 18 single-spaced pages of typed matter, probing the various arguments that have been advanced in favor of and against the proposed price rise.

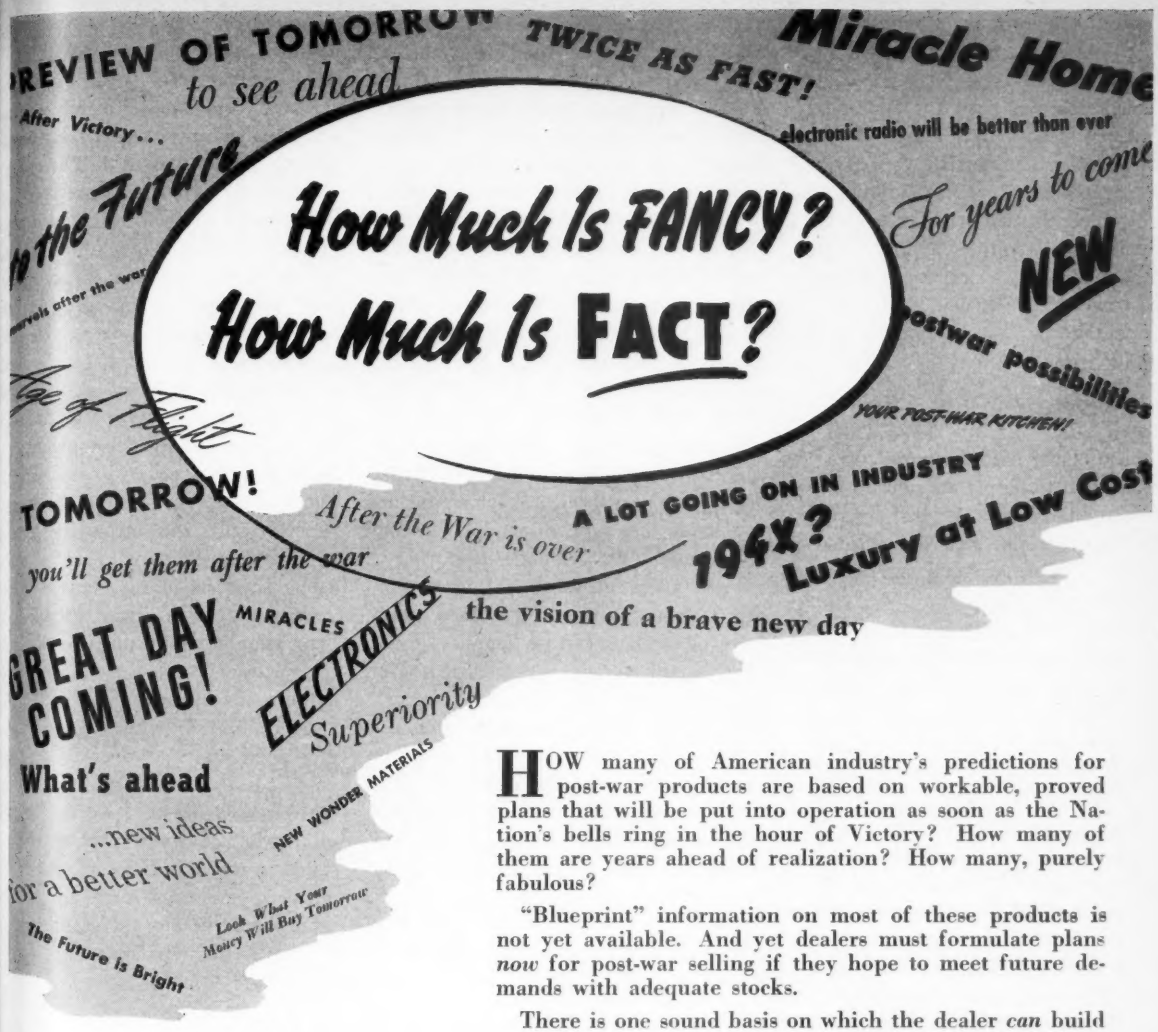
Judge Vinson draws a sharp and significant line in his discussion between the demand for oil to meet an inflated wartime demand, and the needed production to meet a considerably smaller normal demand. Though the total military and naval oil demand is not revealed, Secretary Ickes has pointed out that military gasoline demand alone has reached 600,000 barrels a day. The total is estimated between 1.2 and 1.3 million barrels for all grades of petroleum products. This demand is superimposed on the civilian demand which has been somewhat reduced by rationing. Any slackening of the enormous military demand probably would greatly ease the present civilian shortage, but neither Secretary Ickes nor Judge Vinson makes any estimate of the possibility of such a change. Though Judge Vinson denies the price increase, he indicates that he has been presented with figures on the military and civilian demand.

"The Petroleum Administrator's recommendation for a price increase looks to future needs," says the ruling. "If the problem of future oil supply could be resolved on the basis of estimated total reserves a strong case could be made for the proposition that this nation is in a safe position in that respect (even granting that in recent years additions to estimated known reserves have been largely revisions and extensions of earlier discoveries while new field discoveries have declined in size.) Whereas the American Petroleum Institute estimated proven reserves for 1936 of 13,063,400,000 barrels, the estimated proven reserves in 1941 amounted to 19,589,296,000 barrels and the figure increased again in 1942 to 20,082,793,000 barrels. From the standpoint of successfully prosecuting the war, however, the need is for present productive capacity rather than for reserves depletable over a 50-year period. Because the present question is concerned with a comparatively short run supply problem the emphasis must be placed on productive capacity rather than on total reserves."

### Most Appeals Allowed

Indicating that present prices are adequate, Judge Vinson cites the fact that "no protest has ever been filed with the Price Administrator attacking the general level of crude oil prices and that to date, of the 63 petitions for adjustments in crude oil prices which have been filed and processed by OPA, action favorable to the petitioner was taken in 58." Actual prices for crude range from $3.00 a barrel for Pennsylvania Bradford grade crude to as little as 65 cents a barrel for some Wyoming heavy crudes. It was not contended that present prices were not profitable, but only that an increase might stimulate wildcatting.

"Of the prospective sources of additional domestic productive capacity, it is usually stated exploratory activity, the discovery of new fields, is the most important," Judge Vinson continues. "This year it is anticipated some 3400 wildcat wells will be drilled—an all-time high, and a factor that might suggest that present prices, an expanding market and material priorities furnished an adequate incentive for exploratory activity. This viewpoint gains support from the fact that




HOW many of American industry's predictions for post-war products are based on workable, proved plans that will be put into operation as soon as the Nation's bells ring in the hour of Victory? How many of them are years ahead of realization? How many, purely fabulous?

"Blueprint" information on most of these products is not yet available. And yet dealers must formulate plans *now* for post-war selling if they hope to meet future demands with adequate stocks.

There is one sound basis on which the dealer *can* build post-war selling plans . . . product NAME and REPUTATION.

In the oil burner field, the name HERCO stands for expert engineering, dependable performance, low-cost operation and minimum servicing. The new and better products which Herco engineers are planning for post-war manufacture will uphold that reputation.

> Although Herco is now engaged 100% in war production, we are perfecting these new Herco products . . . and *helping dealers to plan for future business on a sound basis.* Tomorrow, "Heating by Herco" will have even greater significance.

Information about a Herco franchise in your territory is now available. The Herco plan involves no obligation . . . but offers you market protection for post-war. Write us about it *today.*

**HERCO**
*The Oil-Thrifty*
**OIL BURNER**

**HERCO OIL BURNER CORP., LANCASTER, PA.**

*Service in Wartime*
*Sales in Peacetime*

Fuel oil = oil heat

proven oil properties are now selling at all-time highs—additional incentive for the wildcatter."

Though there is need for additional present production, it is indicated that all the country's productive capacity is not being used, due at least in part to lack of transportation facilities to carry oil from the wells to the refineries. Texas alone has capacity to produce oil estimated from 261,000 to 300,000 barrels a day more than the State's September rate of production.

### Vinson Recommendations

In view of the need for more current oil production to supply the inflated war demand and the reduced civilian demand, Judge Vinson made three recommendations to the Petroleum Administrator and the industry:

(1) Full use of productive capacity in Texas oil fields not now being fully utilized. The Director's statement pointed out that a study by the Texas State commission regulating oil production in that state indicated unused productive capacity in Texas fields of more than 300,000 barrels daily over the September production rate. The P. A. W. is taking steps to insure full use of this oil through increased transportation and refinery facilities.

(2) Increased drilling in proven areas —as distinguished from wildcatting. Director Vinson's statement pointed out that the supply of available materials and equipment had increased substantially, permitting a large increase in all types of drilling. Reference was made to a statement by a P. A. W. official "two more rotary-rigs and one more cable tool rig [are] drilling today than were in operation yesterday at this same hour." Drilling of the 19,000 proven area wells programmed by the P. A. W. for 1944 will contribute significantly to the Nation's capacity to produce crude oil. No price increase is necessary to secure drilling of these proven area wells.

(3) Use of foreign oil. Director Vinson stated that up to this point this country with only 38 percent of the estimated crude reserves available to the United Nations is supplying 75 to 80 percent of the oil for the United Nations' war effort. The Director stated "there can be no justification in exhausting this country's oil reserves at the most rapid rate possible if there is any feasible alternative." After pointing to the fact that a Congressional Committee and an oil industry committee had recommended greater use of foreign oil, the Director reviewed the facts respecting the availability of oil for this country's use from the Caribbean and Middle-eastern areas. It was stated that measures are under way to utilize to the full available foreign oil. At least 337,000 barrels daily of foreign oil will be used by the end of next year. This means that there will be no lack of oil to supply military and essential civilian demands, while at the same time the limited oil reserves of this country will be relieved of a part of the disproportionate burden of oil supply. It was stated that supplies are in sight for all essential needs through 1945.

From these measures the Economic Stabilization Director concluded that there would be adequate supplies of oil to meet military and essential needs. He stated that as a safety measure, however, additional incentives should be extended to encourage increased drilling of wildcat wells and development of new fields —the principal objective sought by P. A. W. In this connection the Director pointed out that wildcatting was actually at an all-time high with 3400 wildcat wells expected for this year. He expressed agreement with P. A. W. that additional incentives might be necessary to secure drilling of still more wildcat wells.

In directing the Petroleum Administrator to formulate a program to provide additional incentive for wildcatting and development of new fields, Director Vinson outlined certain governing principles. These were: (1) to be avoided is any increase in the cost of living * * * (2) to be avoided is any complex scheme for subsidy subjecting agencies of government and the oil industry to impossible administrative burdens * * * (3) to be avoided is any program that regards without discrimination those who engage in exploratory activity and the development of any fields and those who do neither." The Director stated in reference to marginal stripper-wells and secondary recovery projects that additional financial support should be extended if it is feasible to do so without a general price increase. The Petroleum Administrator was directed to formulate a program covering these operations, if feasible.

In connection with any program to give additional incentive for drilling of wildcat wells Judge Vinson pointed out that there would be no effect on crude oil production for a year or two. He stated further that there was no prospect whatever measures were adopted that there would be any increase in gasoline for nonessential civilian use.

# Boiler Men Offer Comment On Need for Safety Codes

COMMENT received as a result of the item citing the apparent need for boiler codes, published on page 40 of the November issue, largely agrees that codes are desirable, but there was little agreement as to how far the industry should go in recommending that states, counties or municipalities adopt codes to protect the public. Feeling seems about equally divided for and against public protection by legislation, but it is unanimous on the need for better industry standards.

One of the larger boiler manufacturers objects to the suggestion that the industry should foster codes to be enacted by elements of government. He feels that "it is time to stop running to government agencies and departments with our troubles. If there is need for public protection (and I believe there may be) we should set up our codes of construction and operation on a reasonably high level, and sell those codes to the public. No amount of legislation ever deterred the home owner or builder who is looking for the cheapest or most sub-standard heating plant he can find. We can not expect that state or city officials will police our industry for us. They never have, and they never will. If the standards in the boiler industry are to be lifted, we of the industry must lift them. No boiler inspector or state code will do it for us."

Another prominent manufacturer sees the need of selling codes to the public rather than elements of government:

# AGAIN AVAILABLE *for the Home Front!*

At last, you can look forward to a new heating season with the welcome prospect of having something definite to sell! For, once again, the engineered heating-and-plumbing products of General Fittings Company are available for your resale to homes and non-war industries.

**Strategic Metals Released**

Ever since Pearl Harbor, strategic metals have been "frozen". Entire production of this company has been applied to water heaters, unions, specialties and precision assemblies for war services such as in fighting ships, warplants and Army housing.

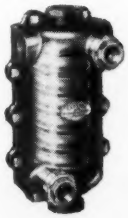
Now, the WPB has released limited quantities of strategic metals . . . and General Fittings Company can again make deliveries to the "home front" on properly rated orders!

**Your Opportunity**

Here is your chance to fill some of the many demands that have been piling up for months. Send your order for water heaters or other General products *today* . . . or write for complete catalog No. 15. *Don't delay* . . . the supply is limited by the reduced quantities of metal available. General Fittings Co., 125 Georgia Ave., Providence, Rhode Island.

GENERAL

WATER HEATERS AND HEATING SPECIALTIES



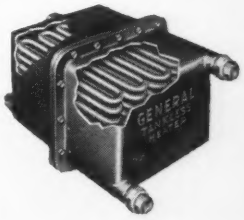
**QUALITY PRODUCTS**

**Tankless and Tank-Type Water Heaters for Industrial Plants—Apartment Houses—Homes**

**Thermostatic Mixing Valves** — **Coil-heated Tanks**

**Water-hammer Silencers** — **Live-steam Heaters**

**Built-in Water Heaters for boilers** — **Pipe Unions**



"Probably the greatest reason as to why codes are not more extensively used is because the public, the ultimate consumer, knows nothing about them and does not demand product made or installed in accordance with existing codes. It is to be hoped that the Indoor Climate Institute will take it upon itself to acquaint the public with the existence of codes that apply to heating equipment so that their use will be in greater demand. If the customers make the demand, the heating contractors and the manufacturers will soon see to it that products are made and installed in accordance with these standards.

"There are many who contend that a company's name is of more importance and of greater value than any code that may be applied to the product that it manufactures. They may be a certain amount of truth in this as far as some industries are concerned but we heartily disagree with it as far as the boiler and radiator industry is concerned. As a matter of fact, I believe there are numerous examples in the industry that will prove that the sale and installation of poor equipment has been a reflection upon the entire industry.

"I believe that a newcomer into the manufacturing of heating equipment is entitled to as much consideration from other members of that industry as they give to each other provided the design of his equipment is such that it does not pull down the level of the industry. Poor designs in the past have not been restricted to these newcomers but they have been responsible for a fairly large share. The design of a good boiler is not as simple as some would have us believe. Furthermore, contrary to the opinions of many people that should know better, there has been considerable improvement in boiler design since the early 30's. In designing a new boiler there are many requirements that must be met and very often we find some one gets a hold of one brilliant idea and designs their boiler around that and neglects many things of equal or more importance."

### Need Codes

The need for stricter codes for the protection of the public and the industry is seen by another boiler manufacturer who endorses any effort that may be made to get better codes in force.

"During a period of emergency such as the present one, there is bound to be a general relaxing of the various codes and the present would seem a most opportune time to start a discussion on the general subject of codes such as you are planning to do. Furthermore, there are probably a number of companies not now manufacturing boilers who are looking forward to the Post War Heating Market and, if so, these companies should be guided by acceptable codes in designing their equipment.

"Prior to the War I believe there were a few boilers on the market which were not constructed in accordance with the A.S.M.E. Code for low pressure heating boilers. While I do not know of any accidents which occurred as a result of their installation, it certainly is harmful to the consumer as well as the boiler industry to permit the manufacture and installation of boilers which are not considered safe under existing codes.

"There is not only a need for code regulations in those areas where they are not in existence but also a need for the uniformity of codes in the various states covering both the manufacture and installation of boilers."

Suggestions for furthering the boiler industry are made by another large manufacturer who sees the need for uniformity of regulations:

"I am of the opinion that an intelligent plan could be worked out by which this situation could be controlled as there is at present no cleancut code covering low pressure boilers.

"You cannot consider either the ASME Code or anything developed by the SHBI or any state code I have ever seen as adequately covering this field. As a matter of fact, there is relatively little along the lines of a structural specification which need be observed on straight low pressure boilers.

"It is probably a Utopian dream to expect national conformity in state requirements covering ratings selection and structural specifications due to the conflict of interests which have controlled the formulation of these policies and the jealousies of state boards.

"Such an ideal solution would, in my opinion, be formulated along the following lines.

1. A nationally effective and equitable rating comparison covering all boilers, not only steel, but cast iron based along the lines of the H & PCNA Code. I think this is an intelligent start towards the right objective, but it still shows certain inequalities and, of course, has been never set up as a national policy with any teeth in it.

2. A metallurgical specification for both steel and cast iron to establish material quality.

3. A structural specification covering minimum allowable mechanical construction.

"The ground work for making such a complete job of this has apparently been fairly well established by the H & PCNA and the extension of their present code seems to be easiest way of extending it into a national policy."

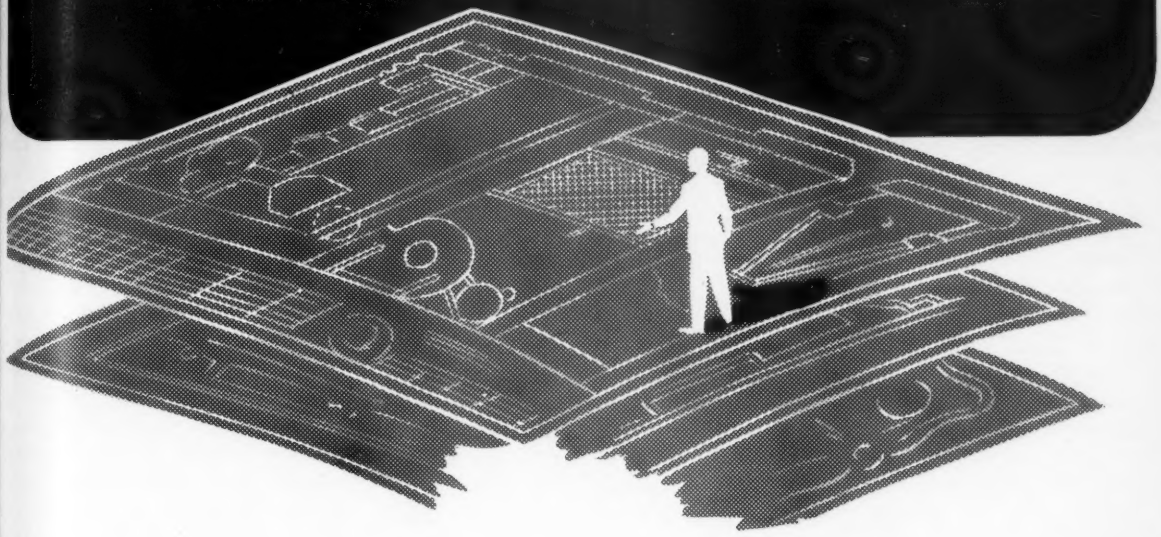
## Postwar Burner Market Looks Good, Not "Colossal"

ESTIMATES of the post-war market for oilburners range upward to more than a million a year, and though it is possible that the industry may hit such a figure at some future time, it is not believed probable that it will be in the near future. All figures at this time must be largely supposition, but there are some sign posts that allow a logical approach to guessing about the post-war future.

Men in the oil and equipment industries know what the public does not; that there will be plenty of fueloil for heating after the war. It is probable that the first job to be done is to convince the public that the talk of short flush production to meet an inflated wartime demand does not jeopardize the normal post-war supply for our regular needs. These normal needs will require much less oil than to fight a global mechanized war almost entirely out of our oil fields. This educational job for the public is urgent, because the actual size of the immediate market for oilheating after the war will depend on public confidence in the fueloil supply.

Physical aspects of the market, though not as bright as some conversation would make them, still indicate an oilheating demand that will be better than our best past years. This "demand," however, is not yet an active urge to buy, but must be created and sold very much as the past demand has been sold. Though there will

# Look to CENTURY
## For Post-War Oil-Heating Progress



YOU don't have to be a starry-eyed dreamer to foresee the effects of Century's vastly expanded war production on the future of the oil heating industry.

Since the day after Pearl Harbor when we enlisted in the war production effort for the duration, Century oil-burning equipment has been guarding the health and comfort of our men in the armed forces. In army camps and shipyards here in the states, as well as in Newfoundland, Iceland, Trinidad, Alaska, North Africa, South Pacific islands, and aboard many of our fighting ships, Century oil burners, furnace units and water heaters are doing their job well.

Our tremendously expanded wartime production, which includes the making of bomb fuzes and other component parts for war, combined with the progress in engineering and research, plus the knowledge of new materials, improved controls and design changes, will mean extra life and new freedom from service interruptions on the post-war Century line.

**Send Today for This Interesting FREE BOOKLET**

Its word and picture story tells how Century switched from the production of oil heating equipment to bomb fuzes in 180 days. Real testimony that American business management operating under a system of free enterprize is equal to the tasks ahead. Only a limited number available, so write for your copy today.

### *We Extend the Season's Greetings*

*—to you dealers and distributors, and a reminder to . . . Look to Century for Post-War Oil Heating Progress. Your wisdom in so doing will add to both your profits and your prestige.*

ARMY E NAVY

**CENTURY ENGINEERING CORP.**

CEDAR RAPIDS, IOWA

OIL BURNERS • BOILER-BURNER UNITS • WARM AIR FURNACES
HUMIDIFIERS • WATER HEATERS • AIR CONDITIONING

fuel oil & oil heat

be advances in the oilheating technique that will make oil more attractive, there also will be advances in methods of burning other fuels, and no one of the three principal fuels will have the market by the hair.

### Single Houses 77%

Most frequently mentioned figure on post-war building is 1,000,000 dwelling units a year. This figure should not be confused with one-family houses. A 100 family apartment house contains 100 dwelling units, though it constitutes a potential market for only one or two oilburners. In the ten most recent prewar years, one-family houses accounted for 77% of the annual dwelling units constructed, and 5% of dwelling units were in two-family houses. If this ratio continues post-war, there would be an indicated 770,000 one-family houses built per year, and 25,000 two-family houses.

This total of 795,000 one- and two-family houses per year will not all be centrally heated. Only 40% of the dwelling units counted in the 1940 census were heated centrally, but it may be that as high as 75% of the new private homes built after the war will have some form of central heat. This would indicate slightly less than 600,000 one- and two-family houses per year with central heating.

A survey conducted by Timken indicates 45% of the people covered now prefer oilheating. If this percentage is applied to the new private homes built in the post-war period, it would indicate a sale of 270,000 domestic units a year to supply the new home market.

In addition to the new home market, there will be a continuing conversion oilburner market for several years after the war. There are about 11,500,000 centrally heated one- and two-family houses in the country, of which 2,386,000 now have oil heat. Since 84% of all central heating is in the "North" according to the 1940 census, this indicates a total of 9,660,000 centrally heated private homes in the best oilburner markets, of which more than 2,000,000 already have been sold. This means possibly 7,500,000 one- and two-family houses as a potential market for conversion oilburners, but the cream already has been skimmed from this market in the areas where oil heat is most popular. The percentage of conversion burners sold in recent prewar years had been falling steadily. It might be possible to average 175,000 conversions a year in the early post-war years, bringing the total sale to conversions and to new homes up to 445,000 burners and units. With replacements, the total market may reach 500,000 oilburner sales a year.

By far the largest single market will be to new homes. Where these homes are to be built, who builds them, and the kind of homes they are to be, all will help to determine how large a market this will be for the oilheating industry.

If building follows the present pattern, most private dwellings will be built in the North which now contains 56% of all existing one- and two-family houses. The South has 33%, and the West 11% of the private dwellings.

### Range of Prices

In what price range most of these future houses are to fall there seems to be little agreement among authorities and investigators. A U. S. Chamber of Commerce survey shows 33% of the houses will be valued at $3000 or less; 26% from $3000 to $5000; 24% from $5000 to $10,000; and 7% valued at more than $10,000. There were 10% uncertain. This may represent what people hope to pay for their houses, and it is extremely doubtful if these figures reflect the inflation that is likely after the war. A more practical survey by the F. W. Dodge organization indicates that 43% of one-family, owner occupied houses will cost $7000 or more. *Parents* Magazine surveyed architects, builders and dealers, 4% of whom estimated that the bulk of post-war homes would be valued up to $3000; 32% between $3000 and $5000; 55% from $5000 to $10,000. This may reflect the desire of the trade to get more money for building, and it certainly takes into account the value of the post-war dollar. A review of all the various surveys and estimates indicates that few informed people expect a flood of very low-cost building.

There is a strong probability that residential building in the immediate post-war period will follow closely the pattern of the prewar era, and changes will be evolutionary rather than revolutionary. The post-war market for oilheating will be good, but not phenomenal.

## Chamber Survey Shows Postwar Demand Increasing

BRINGING a December, 1942, nationwide survey up-to-the-minute, the Chamber of Commerce of the United States has reported that the number of families now planning to purchase one or more major articles within six months after the return of peace has risen from 53% to 64% of the nation's total.

On the other side of the ledger, 61% of the people interviewed said they now are able to save. It was 56% eight months ago. These figures include only those people who *think* they are saving. Actually, 84%, an increase of 3% points, are either accumulating money in a savings account or are putting it in some other form of savings or investment.

At the same time, the public as a whole believes a little more firmly that the first year after the end of the war will be one of prosperity, and that there will be less unemployment than they believed probable eight months ago. The Chamber's figures show that the number of those who have grown more optimistic has risen from 49% of the people to 55%. As to the public's appraisal of industry's post-war capacity to meet the demand for civilian goods, 86% now believe that American factories will take more than six months to catch up with the demand for consumer goods.

While virtually all components in the statistics relating to consumer purchasing and savings intentions went up in the new tabulation, there has been a noticeable drop in family planning for such things as furniture and floor coverings in their homes. There also have been decreases in intentions to redecorate the interior of homes, to modernize kitchens, to add new porches and to renovate bathrooms.

The Chamber's survey show these major changes in trends:

3,675,000 families, compared with 2,590,000 in December, now intend to buy automobiles to cost $3,307,500,000, compared with $2,331,000,000.

The household appliance field shows an increase in buying intentions from $860,185,000 to $1,215,910,000, with the greatest jump occurring in radios and electric kitchen mixers.

Overall home furnishings purchase intentions show only a nominal increase

Our "bit" for Victory has taken the form of manufacturing machine-gun mounts for U. S. Navy aircraft. We have continued to manufacture heaters and warm water heating specialties for the Maritime Commission, Army and Navy hospitals, laundries and bakeries and other essential Government and industrial projects.

Making machine-gun mounts is precision work of high order. It demands machines of extreme accuracy, workers of advanced skill. Many such machines have been added to our equipment. And our staff of workers—enlarged to about triple our peacetime force—is keyed to the highest precision standards.

This precision equipment, training and experience will become an invaluable heritage when the war is over and we can again resume our normal operations.

It will mean that the intricate parts that comprise Taco circulators, flow checks, relief valves, reducing valves, etc., will not merely meet their former high standards, but will all be made with that extreme precision demanded in Navy machine-gun mounts. It will mean that the Taco organization will have retained to the fullest its habits of working to close tolerances.

**PRIORITIES NOTE**

There has been a slight liberalization in government restrictions on the manufacture of heaters of copper tubing for essential civilian use. If you are in the market for a water heater of the most modern type, consult Taco wholesalers or write us for information on the latest procedures to follow in complying with W.P.B. regulations.

TACO HEATERS, INC., 342 MADISON AVE., NEW YORK 17, N. Y.
TACO HEATERS of CANADA, LTD., 24 ADELAIDE ST. W, TORONTO

from $709,905,000 to $711,410,000.

1,540,000 families — an increase of 50%—intend to build or buy a new home within six months after the war is over. The prospective investment has risen from an estimated $5,000,000,000 to $7,184,800,000.

72% of the people say they feel they are at least as well off financially as a year ago, a drop of 1%. The figures, broken down, show the following percentages for the two surveys: East, 65% and 69%; Middlewest, 74% and 72%; South, 79% and 78%; Far West, 70% and 78%.

Not only are people in the higher income brackets more likely than others to be saving money, but they are saving a greater proportion of their incomes, the Chamber reported. For example, 34%—it was 28% last December—of all respondents say they are able to save more than 10% of their monthly income. But, only 14% of people earning less than $90 a month save that amount, compared with 32% of those earning from $90 to $160 monthly, and 54% of those earning more than $210 monthly.

This second survey shows that the percentage of people buying war bonds and stamps has risen from 69 to 76. The percentage of people in the upper income groups investing as much as 10% of their income in such bonds and stamps has dropped from 28 to 23; the middle income group has slumped from 35 to 26; the lower income groups has dropped from 28 to 21. It is obvious from the Chamber's other figures that the number of persons who so invest at least 10% of their income has climbed sharply.

Only 25% of the nation's families are saving for a specific purpose. Even so, that figure is 6 points higher than eight months ago. Despite the evidence that many people intend to make immediate, major post-war purchases, most of them are not, on the basis of present savings, counting on paying cash.

"The American habit of installment buying will continue to be a major factor in large consumer purchases," said the Chamber's report, prepared by a staff headed by William J. Moll, special analyst. "Pertinent to this statement is the following data about installment buying gathered in the survey:

"52% (it was 58% last December) say they have used the time-payment plan to buy articles which they own; 15%, compared with 28% in December, are still making payments for such purchases."

## DEGREE DAY TABLES

| ONE MONTH ONLY — October Normal | October 1942 | October 1943 | Percent Change* | | SEASON TO DATE (Sept. 1 to Oct. 31) Normal | 1942 | 1943 | Percent Change* |
|---|---|---|---|---|---|---|---|---|
| 410 | 420 | 466 | + 11.0 | Albany | 526 | 592 | 656 | + 10.8 |
| 130 | 81 | 151 | + 86.4 | Atlanta | 142 | 114 | 170 | + 49.1 |
| 230 | 149 | 273 | + 83.2 | Baltimore | 264 | 199 | 327 | + 64.3 |
| 338 | 288 | 355 | + 23.2 | Boston | 436 | 391 | 475 | + 21.5 |
| 410 | 367 | 512 | + 39.5 | Buffalo | 535 | 521 | 703 | + 34.9 |
| 334 | 369 | 363 | — 1.6 | Chicago | 418 | 562 | 530 | — 5.7 |
| 274 | 255 | 289 | + 13.3 | Cincinnati | 326 | 390 | 377 | — 3.3 |
| 353 | 319 | 416 | + 30.4 | Cleveland | 403 | 469 | 555 | + 18.3 |
| 70 | 80 | 83 | + 3.8 | Dallas | 75 | 114 | 84 | — 26.3 |
| 415 | 423 | 344 | — 18.7 | Denver | 539 | 576 | 437 | — 24.1 |
| 357 | 318 | 374 | + 17.6 | Des Moines | 456 | 511 | 534 | + 4.5 |
| 387 | 365 | 447 | + 22.5 | Detroit | 496 | 553 | 618 | + 11.8 |
| 433 | 385 | 438 | + 13.8 | Grand Rapids | 559 | 577 | 626 | + 8.5 |
| 368 | 334 | 405 | + 21.3 | Hartford | 474 | 444 | 534 | + 20.3 |
| 601 | 568 | 548 | — 3.5 | Helena | 889 | 846 | 774 | — 8.5 |
| 27 | 10 | 39 | +290.0 | Houston | 27 | 25 | 41 | + 64.0 |
| 299 | 266 | 306 | + 15.0 | Indianapolis | 364 | 399 | 418 | + 4.8 |
| 242 | 218 | 283 | + 29.8 | Kansas City | 292 | 354 | 343 | — 3.1 |
| 43 | 36 | 50 | + 38.9 | Los Angeles | 48 | 39 | 50 | + 28.2 |
| 218 | 208 | 234 | + 12.5 | Louisville | 252 | 315 | 234 | — 25.7 |
| 409 | 456 | 421 | — 7.7 | Milwaukee | 529 | 694 | 625 | — 9.9 |
| 484 | 457 | 480 | + 5.0 | Minneapolis | 647 | 739 | 716 | — 3.1 |
| 23 | 17 | 60 | +252.9 | New Orleans | 23 | 22 | 60 | +172.7 |
| 274 | 202 | 317 | + 56.9 | New York | 325 | 255 | 382 | + 49.8 |
| 325 | 310 | 381 | + 22.9 | Omaha | 406 | 494 | 489 | — 1.0 |
| 236 | 198 | 279 | + 40.9 | Philadelphia | 272 | 245 | 328 | + 33.9 |
| 324 | 293 | 394 | + 34.4 | Pittsburgh | 393 | 418 | 506 | + 21.1 |
| 459 | 494 | 492 | — .4 | Portland, Me. | 638 | 696 | 730 | + 4.9 |
| 298 | 234 | 279 | + 19.2 | Portland, Ore. | 407 | 285 | 294 | + 3.2 |
| 363 | 292 | 349 | + 19.5 | Providence | 467 | 376 | 461 | + 22.6 |
| 218 | 197 | 219 | + 11.2 | St. Louis | 254 | 313 | 275 | — 12.1 |
| 377 | 382 | 334 | — 12.6 | Salt Lake City | 472 | 492 | 360 | — 26.8 |
| 140 | 134 | 131 | — 2.2 | San Francisco | 262 | 289 | 232 | — 19.7 |
| 632 | 583 | 645 | + 10.6 | Sault Ste. Marie | 916 | 924 | 996 | + 7.8 |
| 372 | 298 | 330 | + 10.7 | Seattle | 546 | 411 | 411 | 0 |
| 369 | 348 | 437 | + 25.6 | Toledo | 467 | 512 | 631 | + 23.2 |
| 254 | 153 | 278 | + 81.7 | Washington | 297 | 212 | 342 | + 61.3 |

*Compared with last year, not with normal.

## Coal Is Battling For Larger Market

PLANNING for the long pull, Bituminous Coal Research, Inc., Battelle Memorial Institute, Columbus, Ohio, is starting a five-year research program to develop a larger and more stable market for coal. It is expected that $2,500,000 will be spent on the program to develop fully automatic house heating and cooling, smokeless stoves, gas, and improved locomotives and chemical products.

Meantime, "Furnaceman, Inc.," has inaugurated a fire-tending service for users of Anthracite, and offices have been opened at Lansdowne, Pa., and Albany, N. Y., the first two of some 500 that are reported to be planned. In spite of manpower and transportation shortages, the service offers anthracite users complete care of the fire and ashes for $2.50 a week if he uses no more than eight tons a year, and up to $3.75 a week for 16 to 25 tons annually. Those who use 40 tons or more a year are eligible to buy an Iron Fireman stoker.

This war is testing oil burners as nothing else ever has. You can be sure the American public is finding out which burners make fuel oil rations go further. Gadgets mean little now. It's basic quality of construction that counts. The ability to stand up, to keep on performing! You can be sure America is learning what high quality really means. After the war . . . more than 100,000 salesmen are going to work for the men who sell Gilbarco oil burners. These 100,000 are the present owners of burners made by Gilbarco . . . the men and women who actually know why it pays to buy equipment backed by more knowledge of oil and oil burning than any other burner in the world.

If you are planning ahead now to get in on the cream of the post-war burner sales and fuel oil contracts . . . better drop us a line.

100,000

## SALESMEN READY TO WORK FOR YOU . . .

# GILBARCO OIL BURNERS

GILBERT & BARKER MFG. COMPANY
West Springfield, Mass. • Toronto, Canada

fueloil & oil heat

# Last Month

MILITARY DEMAND for all petroleum products was placed by Petroleum Administrator Ickes at 50,000,000 gallons a day. Representative Randolph of Virginia put the total at 55,000,000 gallons a day. According to Mr. Ickes, the war now is taking 30% of all gasoline; more than 25% of all light fueloil; about 30% of all heavy fueloil; and about 25% of all kerosene.

CAST IRON WATER HEATERS for coal firing (bucket-a-day) production will be maintained by increasing manufacturers' prices if necessary. Manufacturers may apply individually for the price increase.

NATURAL GAS delivery for new residential space heating in the District of Columbia was prohibited by WPB. Gas is obtained for mixing in D. of C. from the Appalachian area which now is facing a shortage. Users who used mixed gas prior to December 2, 1942, or new construction equipped before March 1, 1943, will be supplied.

ANTHRACITE PRICES were raised an average of 62 cents a ton on November 24. Actual prices at the mine were increased from 35 to 70 cents a ton, depending on the size. These prices will be reduced on June 1, 1944, to allow a net increase of about 34 cents a ton.

P-84 was amended again to grant an automatic AA-5 priority to all orders accompanied by an OPA rationing certificate.

PD-1A applications up to $1000 in value soon will be processed in the field, and the form is being simplified to make the filing and processing easier.

L-41 which limits construction has been revised and simplified. Installation of plumbing and heating equipment rated on WPB-2631 (formerly PD-851) is permitted if the cost is less than $200.

STEEL WARM AIR FURNACE prices at the factory were authorized to be increased 9%, and jobbers and retailers are permitted to pass along the amount of the increase to their customers. The price change applies to furnaces for oil gas or coal firing. Similar increases were allowed cast iron furnace manufacturers recently.

STOVE distributors and dealers in the western part of the country may apply for larger allowable inventories of all types of rationed stoves. The change applies to Arizona, California, Nevada, Washington and parts of Idaho and Oregon.

BITUMINOUS COAL prices were allowed to increase an average of 17 cents a ton after Secretary Ickes had asked Stabilization Director Vinson for an increase of 25 cents a ton to offset recent wage increases.

## Coupon Values Remain Unchanged for Period 2

FUELOIL ration coupons for Period 2, which became valid throughout the 33 rationed states on November 30, remain unchanged in value from Period 1. Period 3 coupons also became valid in the Midwest and South at par value. Period 1


FREE — to Draft-O-Stat Dealers

Attention Arresting Action Display

TO HELP YOU SELL Draft-O-Stat

This colorful display features a full-size Hotstream Motorized Draft-O-Stat in action and demonstrates convincingly how fuel savings of 10% to 30% are made possible by scientific control of chimney draft. As the Draft-O-Stat moves through the cycles of "on" and "off" periods, a constantly changing message explains what is happening, holding the prospect's attention until he gets the complete story. The display is effectively illuminated and suitable for show window, counter or sales floor.

Free Offer — Display is furnished free with initial order of 6 or more Motorized Draft-O-Stats. It may also be purchased, completely assembled, for $2.80 plus net cost of two Motorized Draft-O-Stats—one of which is incorporated in the display, the other packaged for sale. Supply is limited, so get your order in early or write for details.

Cut Fuel Bills 10% to 30%
HEAT YOUR HOME
... NOT THE CHIMNEY
Here's why Draft-O-Stat pays for itself in Fuel savings
Draft-O-Stat
EASILY INSTALLED ON ANY FURNACE OR BOILER
Ask for Full Information

Be a FUEL SAVING WARDEN to your customers

Combustion Equipment Division of

THE HOTSTREAM HEATER CO.

3907 GRAND AVENUE • CLEVELAND, OHIO

coupons will remain valid in all areas until the end of Period 2, on January 4, and Period 2 coupons will be valid until February 8, except in the South where Period 3 ends on January 25.

*Amendment 84*, effective November 2, permits the issuance of fueloil rations for use in generating electric power in District 1. Since March 24, it has not been permitted to use fueloil to generate electricity where coal or hydro-electric plants could be tied in.

*Amendment 87*, effective November 11, provides for the issuance of rations to new installations where they replace worn-out or inefficient equipment, and it brings OPA regulation into conformity with PAW and WPB actions suspending forced conversion of commercial and industrial jobs.

*Amendment 88*, effective November 1, extends the credit restrictions of Amendment 86 to those persons believed to be in default, and prohibits transfer of oil to any person who does not have sufficient coupons or banking credits to cover the delivery.

*Amendment 89*, effective December 1, cancels "change making" coupons on the Class 1 and 2 sheets after December 1.

◈

*Richard P. Brown*, chairman of the board of the Brown Instrument Co., and vice-president of the Minneapolis-Honeywell Regulator Co., has been named deputy director of the War Production Board, Third Region. For the last 18 months Mr. Brown has been serving as reigonal consultant to the Defense Plant Corp., subsidiary to RFC.

*Roy W. Weekes* and *N. E. Hill* have joined the engineering department staff of the L. J. Mueller Furnace Co., Milwaukee. Both men have long experience in the field, and will help with engineering, design and development for Mueller.

*D. M. Cramer* has been appointed manager of the Price and Order Department of Chrysler Airtemp, Dayton, succeeding *Joe M. Higgins* who now is assigned to the Postwar Planning Department. *R. L. Fosberg* has been appointed manufacturing budget director in addition to his duties as Government Property Custodian.


# It's Time to Start Planning for Postwar PROFITS!

Postwar planning committees in the Heating Industry advise us that many new postwar homes will be adequately heated with two quarts of oil per hour or less, that the majority will be heated with less than three quarts per hour – and that their owners will demand automatic oil heat.

As you know, this demand cannot be met by pressure type oil-burning equipment, which is not satisfactory in these small capacities.

However, H. C. Little dealers will be sitting pretty in the postwar market, because they will be selling H. C. Little's exclusive, patented, fully automatic, vaporizing-type oil-burning equipment, which ideally meets these conditions.

In fact, the H. C. Little Burner Co. is the only heating equipment manufacturer in America who can meet this demand with factory assembled units which combine fully automatic operation, electric ignition, thermostatic control and vaporizing burners. These units include floor furnaces, wall furnaces, circulating heaters and hot water heaters – a complete range of sizes and types of automatic oil heat especially designed for small homes.

If you're interested, let's go after that postwar market together.

**WRITE FOR FREE BOOKLET**

**H. C. LITTLE BURNER CO.**

*Send for a copy of "How to Get Real Profits in Postwar Heating." You'll find it interesting.*

**San Rafael, Calif.** *(Branches in Principal Cities)*

## Manpower and Tool Shortages Hit Wildcats

URGING CONGRESS to bypass the ruling of Economic Stabilization Director Fred Vinson and order a 35-cent a barrel increase in the price of crude oil, the Petroleum Industry War Council adopted two resolutions on November 9, asking Administrator Ickes and the Congress to grant the increase. Following this, on November 20, action was initiated in Congress to put all oil and coal matters in the hands of Administrator Ickes.

The new appeal for a higher oil price still is based on the premise that it is needed to increase current oil production. Opinions differ on the need for a price increase, but most disinterested authorities seem to agree that it will have little effect on oil well drilling or petroleum production.

Oil men meeting at Chicago, November 10, heard John M. Lovejoy, chairman of PIWC's Manpower Committee, say that the production division of the industry must have 35,000 new employees in 1944 to replace men taken by selective service and other industries, and to expand field activities.

At the same session Arch H. Rowan of the American Association of Drilling Contractors, made further pertinent comments on the drop in well completions. He pointed out that since January 1 this year there has been an increase of 63.1% in the number of rotary-drilling rigs in operation, though completions will be 46% less than 1941, and 4% less than in 1942. Mr. Rowan does not mention the price of oil in his paper, but he does say that (1) a greater percentage of wildcat wells are being drilled, and they take longer to complete than wells in proven territory; (2) wells are being drilled to greater depth than in 1941 and 1942; (3) inferior materials and lack of repair parts, coupled with a lack of skilled labor has slowed oil well completions.

Though there were an estimated 1238 rotary drilling rigs in operation on October 25, and only 275 idle rigs in the country, Mr. Rowan feels total well completions will be materially reduced this year due to causes beyond the industry's control. Minor repair parts for engines and rigs take two to three months to get, he reports, during which time the entire operation may have to be stopped. Tool steel is of poorer quality so that bits do not work as long before they have to be removed from the hole, and "the time required to pull a drill stem on a deep hole is considerably longer than the ro-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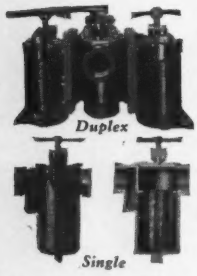
**Intelligent engineering is only the starting point. Consistent on-the-job performance over many years provides practical endorsement of KRAISSL design and manufacture.**

**Class 72 Strainers and Filters**




Single and Duplex types for suction or discharge service—any practical degree of filtration in units designed for low pressures as well as up to 500 lbs. hydrostatic test—easily removable filter basket insures quick cleaning.

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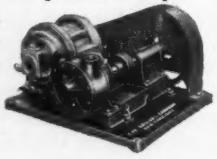
Standard equipment wherever independent pump and motor sets or booster pumps for pump-type burners are required.



**Kraissl-Trumbull No. 522 Fuel Pump Unit**

Rugged, dependable wall pump for gravity type oil burners having burning capacity of not more than 3 gals. per hour — Approved by Underwriters' Labs., Inc.

**Submit your fuel-line problems to KRAISSL engineers—literature and prices on request.**

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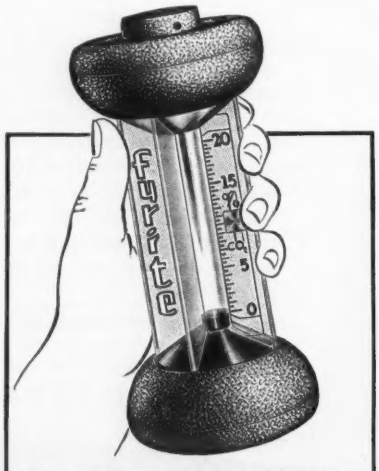

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***That Simplifies Combustion Tests***

Companion Draft Gauge and Mercury Thermometer also available.

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**THANK YOU**

**for doing your share!**

No new burners! Fuel oil rationed! These are tough times for us both! But together, we've done our part keeping the industry going for that great post-war market ahead!

You have done your share by keeping today's burners working—and here at Sun Oil, we've done ours by continuing to market SUNHEAT Furnace Oils — the oils that are especially marketed for domestic oil burners.

And there are thousands who know that for hot heat, for sure heat, it's always—SUNHEAT!

**SUNHEAT FURNACE OILS**

**SUN OIL CO., PHILADELPHIA**

rating time the bit is on bottom." Complaining about the reduction in quality of present-day materials, Mr. Rowan says, "Under no circumstances should the quality of the bits, drill collars, tool joints and drill pipe be impaired. It should be kept constantly in mind that the work being done is sometimes two miles from the derrick floor and out of sight."

Mr. Rowan also points out that the able bodied young men who formerly have done the rugged work around the drilling rig have been taken by the armed services, or been recruited by other industries. Manpower now available to the driller is not trained or able to operate the equipment efficiently. The result of all these problems is a decrease in the number of well completions this year, though 63% more rigs are working than at the start of the year.

◈

HERBERT HERKIMER, former president of Herkimer Institute, has organized Herkimer Engineer Associates, New York, to do a general advisory engineering business.

## Home Building Off

CONSTRUCTION was started on 276,000 new nonfarm dwelling units during the first 9 months of 1943, Secretary of Labor Perkins reports. "This was 31% less than were started during the first 9 months of 1942," she said. "One-half of the new family dwelling units will be located in public war housing projects, while 120,900 of the 138,381 privately financed units started are being constructed under the private war housing program of the National Housing Agency.

"One-family dwellings comprised 81% of all units started during the first 9 months of 1943, 2-family dwellings accounted for 5%, and multifamily units for 14%. During the same months of 1942, 80% of the new units were of the 1-family type, 4% of the 2-family type and 16% in multifamily buildings. The comparisons are greatly affected by the inclusion of publicly financed units which are now principally 1-family row-type units. Material restrictions on private builders were primarily responsible for the 52% drop in the number of privately financed 1-family units started while the number of privately financed 2-family units declined 1% and private multifamily units 19% from the corresponding totals for the first 9 months of 1942."

◈

## Century Explains Award In Booklet to Dealers

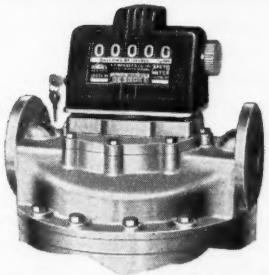
WAR WORK that has earned the company the Army-Navy "E" Award is outlined in an attractive booklet that Century Engineering Corp., Cedar Rapids, Ia., is sending to its dealer organization. Generously illustrated, this over-size booklet traces the company's work since Pearl Harbor, tooling and producing bomb fuses for the armed forces.

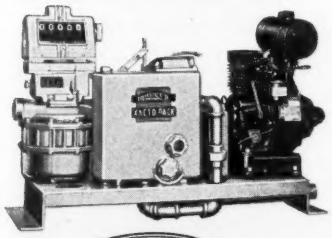
"From Pearl Harbor to the time of our "E" Award, war has been our business," the text explains. "So it must continue to be until Victory is won. We know you and every other loyal Century dealer and distributor appreciate this . . . but we wanted you to know the whole story, for your willing sacrifice of sales and profits has helped make it possible."


FOR COMPLETE SATISFACTION *Choose*

BOWSER XACTOMETER

THE METERS THAT... HAVE SEEN... ARE IN AND GIVE SERVICE





Use meters to save trucks, tires and labor. But when you choose meters . . . choose Xacto . . . the meter that is time-tried and proved accurate. The choice, for years of experienced marketers for use in bulk plants and on trucks. . . . Xacto is doing fighting duty in fueling jeeps, trucks and airplanes . . . gas and diesel-electric trains . . . filling cans and barrels with motor fuel for use at the front . . . checking airplane fuel consumption . . . and a host of other war time duties.

There's nothing finer than Xacto . . . the world's most widely used meter.

BOWSER, INC.
FORT WAYNE, IND.

ARMY NAVY

Lower left is the popular Xacto-pack . . . a complete unit with gasoline engine or electric motor. . . . air release strainer and power pump.

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SALES AND SERVICE FROM COAST TO COAST

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Cleveland, Ohio — Pittsburgh, Pa.
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BOWSER

*A SIZE AND TYPE FOR EVERY NEED*

MAKERS OF METERS THAT ARE SERVICE PROVED !

## Distributor Panel Discusses Rationing

SIX MEMBERS of the Fuel Oil Distributors Panel met with OPA fuel rationing officials at Washington, November 19, to discuss a number of current problems aimed at smoothing field handling of fueloil rationing.

Distributors asked that current publicity on the percentage of heating load passed week by week be calculated on a 65 degree base instead of the 60 degree base which OPA used to more nearly reflect the rationed demand. It was felt that the trade and the public would better understand degree days figured from the traditional base than from the 60 degree base. It was also suggested that distributor organizations also be encouraged to disseminate the weather data to newspapers in their areas.

Difficulty of home owners in some areas getting enough oil to heat large houses that have been converted to apartment or rooming houses should be handled under the "change of circumstances" provision in the rationing regulations. OPA plans to clarify these cases to the industry and to its local boards, possibly in a future "Industry Letter."

Recommendations of the OHI Distribution Division on minimum emergency and supplementary rations were discussed. Though officials wish to help in avoiding uneconomically small drops, it was explained that minimum deliveries of 50 gallons of kerosene and range oil might increase overall deliveries of a very scarce product. Minimum drops of 100 gallons of domestic heating oils would be more feasible, particularly for larger users. It was felt that minimum drops of 500 gallons of heavy oils, recommended by OHI, would be difficult in areas restricting local storage capacity. Deliveries may have to be regulated according to local rules to avoid too small drops.

Rationing officials report they are working on a revision of the rationing regulations to include the amendments that have been made since the program was first introduced. It was also announced that work is nearly completed on a revised and simplified form 1104. Forms 1102 and 1103 also are being revised.

It was also decided that changes would be made to allow customers to submit a certificate from the dealer holding his coupons, showing the exact number of coupons on deposit. This would allow a customer to make an appeal without getting his coupon sheets from the dealer for submission to his local board. It was felt this would cut the amount of work and travel necessary in making an appeal for more oil.

Present at the panel meeting were Harry Bloomberg, New York; E. E. Hadlick, Minneapolis; Lionel L. Jacobs, Philadelphia; W. F. Schierholz, St. Louis; Lester Scott, Washington; and Frank E. Spencer, Chicago.

◈

M. WALLER CORP., Baltimore, Md., fuel-oil and gasoline company was purchased at auction for $215,000 on Sept. 10 before Circuit Judge Emory H. Wiles by Paul R. Kach, attorney who made the winning bid for the Alliance Oil Co., which he said was "backed by a substantial corporation."

## One Day Session for Warm Air Association

NATIONAL Warm Air Heating and Air Conditioning Association's 30th Annual Convention at Cincinnati, December 8, will have a crowded program. Previously it was planned to carry over the program to December 9, but in the war interest it was deemed advisable to conserve time by holding a one day convention. Committee and Board of Directors meetings will be held on Tuesday, December 7.

Numerous and important subjects presented by men outstanding in industry will be on the convention program as follows:

Residential Construction in 1944 and future possibilities by Thomas S. Holden, President of the F. W. Dodge Corp.

Labor problems by Walter L. Seelbach, member 5th Region War Labor Board, President, Gray Iron Founders Society.

Heating industry plans for post war by P. B. Zimmerman, President, Indoor Climate Institute and Vice President and General Sales Manager, Airtemp Division of the Chrysler Corporation.

Post War Planning by Frederick V. Geier, Community Chairman, Committee of Economic Development and President of the Cincinnati Milling Machine Company. Mr. Geier will be guest speaker at the luncheon.

Post War Information Committee of which W. L. McGrath, Vice President and General Manager, Williamson Heater Co., is the chairman.

H. F. Randolph, Vice President, International Heater Company, will speak on "Radiant Heating."

Professor S. Konzo will outline the proposed short design method for forced warm air heating.

Representatives from the Plumbing and Heating Division and Office of Civilian Requirements of WPB will present short subjects.

## Ceramic Heating Plant In Pittsburgh Housing

WITH the blessing of the clay products division of WPB and the Bureau of Standards, the Pittsburgh Housing Authority is installing in its Broadhead Manor low-cost housing project a built-in heater that will use any fuel except oil or gas. It is made of hollow tile and is placed in the center of a small house with its exterior walls exposed to the rooms it is intended to heat. A flue takes heat to the second floor. The fuel bin and firing doors open into the home entrance halls. A series of small holes allows air to flow into the tile composing the stove's wall, at the bottom, and another series permits its exit at the top. It is a development of the German - Swiss - Scandinavian "Kachelofen," improved by Alexander Dzubay, heating engineer, in the laboratories of Carnegie Tech., around a basic idea supplied by Dr. B. J. Hovde, administrator of the housing authority. It is being installed in 316 of the 448 dwelling units in the project.

*A. N. Morton* has been appointed vice-president and director of Mack Manufacturing Corp., and C. W. *Haseltine* is vice-president of Mack Trucks, Inc., it was announced by *L. G. Bissell*, chairman, at a regular board meeting. Mr. Raseltine also is secretary-treasurer.


# This is the Hose That GOODALL Built . . . To Give You Quicker Deliveries and Longer Profits!

## "NEWTYPE CORD"

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## FUEL OIL HOSE

***With the Non-Flattening, Kink-Proof Construction.***

Whether partly reeled or sharply bent, this hose stays *wide open*, to permit a full, fast flow. "Synplastic" tube is non-swelling . . . no shrinkage of inside diameter to interfere with that rush of oil from truck to tank. Extremely flexible, light in weight, easy to handle. Available in all standard sizes.

Equip your trucks, now, with "NEWTYPE CORD" hose and profit by the proven advantages its use provides. Our nearest branch will promptly furnish prices and complete information.

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MAIN OFFICE: 9 South 36 St., Philadelphia 4, Pa.

Branches and Distributors from Coast to Coast

THE GOODALL-WHITEHEAD COMPANIES

Factory—Trenton, N. J. Established 1870

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

73 Years of "Know How" — Our Most Valuable Commodity

## Oil-Fired Furnaces Down Nearly 84% from 1942

ORDERS BOOKED for all cast iron and steel gravity and forced air furnaces in the first nine months of 1943 were off 39% from the same period last year, but orders for oilfired units suffered a decrease of 83.9% in the same period. In the first three quarters of this year there were orders reported to the Bureau of the Census for 1,697 oilfired winter air conditioning units, and 735 gravity furnaces. This compares with orders for 12,247 oilfired forced air units and 3,837 gravity furnaces in the first nine months of 1942.

In the second and third quarters this year one-third of the manufacturers on the Bureau's list reported no furnace orders booked.

## Launch Program of Indoor Climate Institute

A NATIONAL PROGRAM of education was launched in behalf of the heating, cooling, and air conditioning industries at the first joint meeting of officers, directors and advisory council to the board of the Indoor Climate Institute held in Chicago early in November.

Pointing out the job that can be done on an industry-wide basis, ICI President, Paul B. Zimmerman said:

"The American public has benefited immeasurably from the cooperative efforts of manufacturers who have been inspired by a desire to have all the members of an industry subscribe to policies, principles and practices which assure the public of better products and better living conditions. The modern kitchen is a perfect example of this educational effort on the part of manufacturers. Better lighting, better wiring—many other of the everyday aids to better living—were stimulated in the same manner.

"Today, heat, next to food, is the most important factor affecting the health of Americans. The activities of the Indoor Climate Institute will include a far-reaching program of training and public education on improved living standards. The home owner will, for the first time, be able to understand and evaluate the many advantages obtainable through modern heating, cooling and air conditioning equipment properly installed. This will assure greater indoor comfort and health."

Headquarters of ICI will be in Detroit, Michigan, but local authorized chapters will be established in the principal cities of the United States to bring the program into every community.

ICI has published a plan book setting forth the organization and activities of the group during the war and post-war periods. Six committees will be formed to promote the program.

**ICI Officers** *examine the prospectus. Standing: E. N. McDonnell, treasurer; and L. N. Hunter, second vice-president. Seated: T. A. Crawford, first vice-president; Paul Zimmerman, president; and R. E. Moore, secretary.*

A Finance Committee will handle membership subscriptions and the budget.

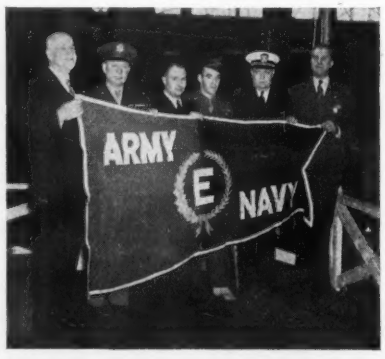
The Technical Committee will study codes, rating methods and research work now being conducted by trade groups.

The Executive Committee will supervise the ICI staff.

Publicity Committee will handle trade and public promotion and publicity plans to be used by local chapters.

An Educational Committee is to work with schools and colleges in the development of regular and short courses in heating, cooling and air conditioning.

Local Chapter Committee will supervise establishment of authorized ICI local chapters to carry on educational work in its own area.




*Receiving the "E" pennant for Fitzgibbons Boiler Co., are Homer Addams, left, president, and Paul Addams, right, executive vice-president.*

## M-H Earnings Up

EARNINGS of the Minneapolis-Honeywell Regulator Company were up for the first nine months this year to a gross of $20,057,264 from $9,679,814 in the same period of 1942. Net profit for the period, after allowing for taxes and refunds stand at $2,216,733 against $1,802,701.

## Petro Issues Statement

PETROLEUM Heat & Power Company and subsidiaries showed a gross profit of $2,371,405.49 on net sales of $13,253,633.58 in the year ended June 30, 1943. After operating expenses this became a net operating loss of $61,208.52. Credits applicable to prior years allowed the company to transfer $133,352.46 to earned surplus for the year.

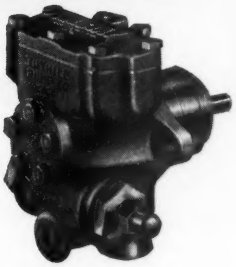
## George G. Gebhart

George Grove Gebhart, 57, sales manager of the Hotstream Heater Co., Cleveland, recently died after an illness of more than a year. He had been with the company for 21 years. Mr. Gebhart was a native of Dayton, Ohio, where he had been sales manager for manufacturing concerns before going to Cleveland to take over Hotstream sales.

## John W. Carnes

John W. Carnes, 60, died at New York, November 20, after an illness of a month. At the time of his death Mr. Carnes was vice-president and general sales manager of the Sinclair Refining Co., and was chairman of PAW's marketing committee for District 1. Mr. Carnes died of double pneumonia following a serious operation.

# IT GOES . . . . . WHERE IT HELPS THE MOST!



It's no fun to turn down orders from old friends, but Tuthill Pumps and Fuelstats are needed where they'll do the most good — on the fighting fronts.

Until Victory changes the picture, you can rely on Tuthill's authorized service stations or the factory for repairs and reconditioning to keep your present pumping equipment operating efficiently on the home front.

TUTHILL IS BUILDING "FIGHTING PUMPS" FOR THE ARMY, NAVY, AIR FORCE AND MERCHANT MARINE.

**TUTHILL PUMP COMPANY**

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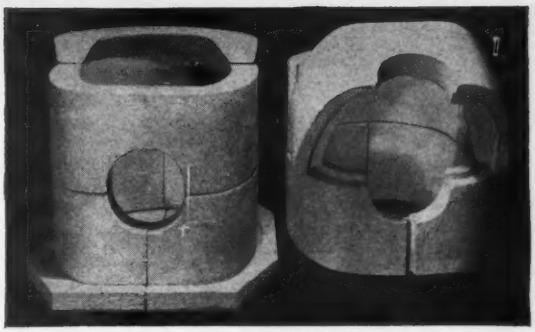
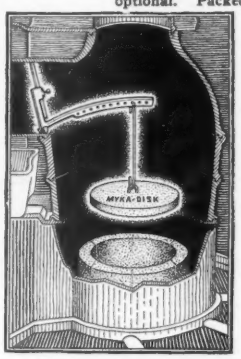


# "IN-QUIK" FIRE CHAMBERS

Installed in a few minutes. No bonding cement needed. Horizontal rabbeted joints, and vertical tongue-and-groove joints are flame-tight, and give a locked, well-anchored structure. Walls 2" thick. Chamber will withstand over 2600°F. Corrugated under-surface of floor forms dead air spaces beneath chamber.

| Size | Gal. P. H. | Sq. In. Inside | Inside Length | Inside Width | Height | Weight, Chamber |
|---|---|---|---|---|---|---|
| No. 1 | 1-1.35 | 115 | 13" | 11" | 13" | 87 lbs. |
| No. 2 | 1.35-1.65 | 149 | 15" | 13" | 13½" | 96 lbs. |
| No. 3 | 1.65-2.00 | 179 | 16½" | 13¼" | 13½" | 112 lbs. |

Chamber only, or Chamber and Floor, are optional. Packed in strong wood crates.




5 Minutes to install in feed-door of furnace or boiler.

## MYKA-DISK No. 1

Reduces oil bills 10% to 15% and more. Permits live heating surfaces to absorb more heat units. Lowers stack temperature, lessens soot-formation, raises $CO_2$ content of gases, improves combustion, brings faster heating, and does not hurt draft.

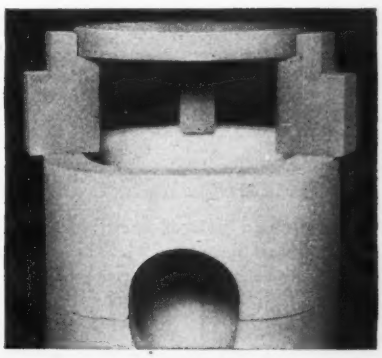
*MYKA-DISK* Baffle is 10", 12", or 14" dia., and 1¼" thick. Reinforced with stainless steel rod.

*DISK-ARM* (Pat. pending) is rugged gray-iron casting. Fits any feed-door by means of *SLIDE-BAR* and *SET SCREW*. Suitable for plants 18" to 30" I.D.

*HANGER-ROD* is 3/16" stainless steel. High tensile strength at red heat. Cannot be dislodged when hooked through center loop of *MYKA-DISK*. No. 1 Outfit shipped complete (DISK size as desired) in strong carton, or 3 Outfits per wood crate.

## MYKA-DISK No. 2

Brings same beneficial results as No. 1 Outfit, but lower-priced. MYKA-DISK (10", 12", or 14" dia.) is supported on 3 refractory *ADJUSTO-LEGS* having "steps" 5", 6½" and 8" above top of firepot. Legs may be "spotted" with cement, but this is not essential. Installed in a few minutes. No harmful effect on draft. *ADJUSTO-LEGS* and *MYKA-DISK* withstand more than 2600°F. Practically indestructible. The price is easy on the Owner's purse. A very fast seller. No. 2 Outfit shipped complete (*DISK* size as desired) in strong carton, or 3 Outfits per wood crate.



MYKA-DISK resting on ADJUSTO-LEGS on top of any Fire Chamber.

For Prices and Trade Discounts, write

**INSULATION & REFRACTORIES CO.**
WILLIAMSON • WAYNE COUNTY • N. Y.

fuelfoil & oil heat

# Here's What YOU Can Do TO HELP CONSERVE UNCLE SAM'S FUEL!

## 1 GET THE FACTS

**Secure complete data on *all* fuel saving material and appliances. Uncle Sam is telling Americans, "See your local heating expert."**

## 2 ADVERTISE

**Tell your market about the fuel saving products you have. Field provides mats for newspaper advertising. Use them to increase sales.**

## 3 SELL

**This means telling your market how and why and at what small cost a Field Control will cut their fuel consumption. Practically every heating plant — large or small — needs a Field Draft Control.**

# FIELD DRAFT CONTROLS SAVE 5% TO 25% OF FUEL

By controlling natural draft, the Field Control cuts fuel consumption 5% to 25%! The units shown cover installations ranging from space heaters to large industrial boilers — coal or oil. The domestic units require as little as 30 minutes to install. The market is enormous.

FIELD Conserves FUEL
COOPERATE WITH UNCLE SAM'S FUEL CONSERVATION PLAN...

**FIELD CONTROL DIVISION**
**H. D. Conkey & Co.**
**Mendota, Illinois**



# NOZZLES AT WAR?

Fig. F-80

**Yes, all we can produce! . . . But we are *still* shipping emergency orders for one or two nozzles promptly! However, you should make those you have *last* as long as possible.**

***Don't:***

1. Clean orifices with needles, pins, etc.—A tiny scratch will ruin the spray. Use sharpened toothpicks.
2. Remove hard carbon from the slots of the disc or inside the nozzle with pointed metal objects or files—a damaged seat or imperfect slot means another nozzle for the scrap. Use a soft brass wire brush and wash all parts thoroughly before assembly.
3. Carry service nozzles unprotected and jumbled together in a box—sharp corners will nick the orifices. Keep them in individual cartons or in a Monarch Nozzle box.

***Do you have our Catalog D?***

**MONARCH MFG. WORKS, INC**
E. WESTMORELAND AND SALMON STS., PHILADELPHIA 34, PA.



# IMPORTANT NOTICE!

The paper shortage may force circulation economies and restrictions. GET YOUR SUBSCRIPTION IN NOW, BEFORE A DEADLINE IS IMPOSED. Take no chances: Send it today!

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No. 1 . . . . . Price: $5.00
1 Year Subscription . . . . . ($3)
1 Beacon Boiler Book . . . . . ($3)

No. 2 . . . . . Price: $4.00
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1 Oil Burner Handbook . . . . . ($2.50)

No. 3 . . . . . Price: $6.00
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1 Beacon Boiler Book . . . . . ($3)
1 Oil Burner Handbook . . . . . ($2.50)

Send check or moneyorder with each order. Otherwise we cannot accept it.

**YOU'LL FIND THIS THE YEAR'S BEST SMALL INVESTMENT.**

Circulation Department
**FUEL OIL AND OIL HEAT**
232 Madison Avenue New York City 16

# Reader's Problems

*Q. Nearly continuous operation of the burner causes high oil consumption on a commercial installation. Tht steam boiler never raises one pound pressure and the radiators are never fully heated, though on a cold morning the burner runs steadily for three hours at a time. The boiler catalogue says the boiler should be able to handle 1,100 sq. ft. of standing steam radiation, and the load is 920 sq. ft. The job has given trouble for years. With oil rationed now, the owner wants it made perfect. How can the problem be handled?*

J.S.M., HARTFORD, CONN.

A. First, the boiler may be to blame; actually it may be unable to carry 1,100 or even 920 sq. ft. of standing radiation at a passable efficiency; again, it may be poorly suited to oil firing. Second, the load may be exceptionally hard to carry. For example, there may be long uninsulated steam mains or the space in which the radiators are located may be cooler than usual. Third, the firing rate you are using may be too low for the load. Fired by an efficient oil flame of the proper size, the boiler may be able to handle the load easily. Fourth, the efficiency of the oil flame may be so low that it alone is responsible for the inability to carry the load properly.

To approach the problem intelligently, you must make thorough tests of $CO_2$, stack temperature, and draft, using modern combustion testing instruments. We suggest that you fire the boiler at 3.5 gph, and if necessary do some intensive work to arrive at a minimum of about 11% $CO_2$ with no chimney smoke. Considerable effort may be needed before you arrive at this. For example, air leaks in the boiler may have to be located and sealed, the firebox may need improvements or complete rebuilding, the burner itself may need considerable attention, and a good smokepipe draft regulator may be needed.

With good combustion (that is a minimum of about 11% $CO_2$ with no chimney smoke), check the stack temperature. If it is considerably above 600°F., the boiler is doing a poor job of absorbing the heat from the flame. With the combustion quality good, 3.5 gph will carry 920 sq. ft. of standing steam radiation easily if the job conditions are not very abnormal and if the boiler can absorb efficiently the heat from a flame sized for the load.

◈

*Q. How can we get smoother starts from an automatic heavy-oil industrial burner? The firebox is short because of the design of the 175 hp. boiler. Because of increases in the size of this defense plant, we fired it harder and harder, up to about 150% rating of the boiler. Now a cloud of oil vapor and smoke comes from the auxiliary air openings under the firebox floor when the burner starts.*

A.W.S., NEWARK.

A. Especially if manufactured gas is used for ignition, it may be feasible to alter the burner so that the gas flame used for ignition is much larger. This often gives smoother starting. Closing the firebox auxiliary air openings close to the burner and enlarging the openings farther back in the firebox may help. If the burner hasn't controls for low-fire starting, by all means install them and tune for the smallest practical starting flame. Have the auxiliary air control damper, indicated by the arrow low in the drawing, practically closed for starting.

The drawing shows a remedy you may be able to provide with no delay. Install a duct for the auxiliary air. Provide an inlet of considerable size, fitted with a swinging damper. Using an external arm and weight you provide for this, adjust the damper to hang nearly closed (about 20° to 30° from vertical) when the burner is idle. Any tendency of gases to flow from the boiler into the boiler room through this duct when the burner starts should close the damper tightly, causing it to hit a stop. For normal operation of the burner the damper should swing open so far that it does not restrict the flow of secondary air. A large, free swinging, adjustable damper wil do the job for you.

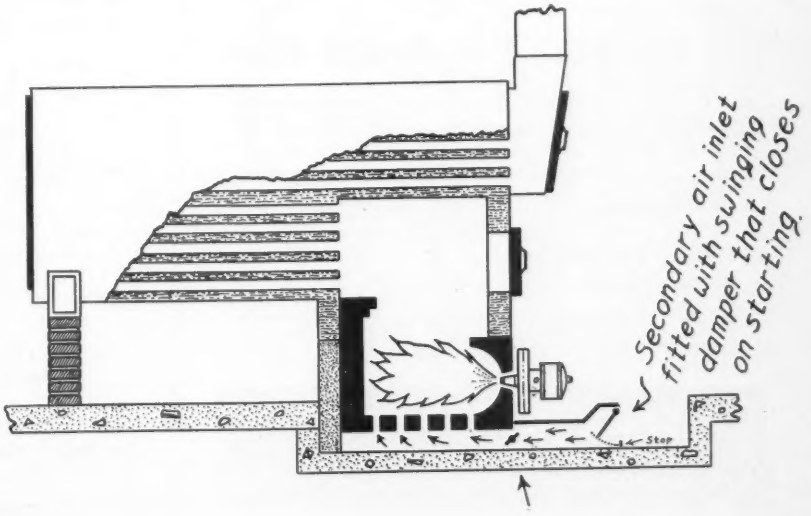
◈

*Q. We have heard rumors that the Aldrich Co., Wyoming, Ill., has been put out of business by a Government Agency. Do you have any information on the company's present position and its operations?*

W.L.B., HASTINGS, N. Y.

A. Aldrich Company has been making its regular line of boilers and water heaters exclusively for the armed forces since June 1, 1942, according to Lloyd Aldrich, and is producing boilers at the rate of about 700 per month. The company still is a co-partnership equally owned by L. I. Aldrich, N. M. Aldrich, W. A. Hale, and E. A. Hale.

Charges of violation of WPB rulings in the obtaining of material for boilers manufactured for the Navy were preferred against the company in May, 1943, which charges have not been sub-



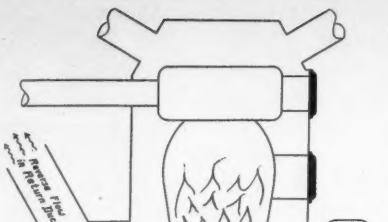
stantiated. Up to the time of the filing of these charges Mr. Aldrich was active manager of the company and the filing of the charges resulted in the hiring of Alfred Buckley of Buckley and Scott, Inc., Providence, R. I. as temporary manager, this change being made at the suggestion of the WPB under the agreement that Aldrich Company would be allowed further material for manufacture, provided such change was made. Mr. Buckley was selected and employed by the company. The arrangement is only temporary and as soon as the company's government commitments are manufactured and shipped Mr. Aldrich will resume active management.

Both Mr. Aldrich and Mr. Hale are devoting their full time to the affairs of the company.

◈

*Q. The gravity circulation warm air heating plant in my own home has worked poorly since I installed a new burner three years ago. The jacket overheats enough to burn off part of the paint. No warm air comes from some of the downstairs registers. Occasionally, perhaps when the wind blows a certain way, we get warm air from the large return-air register in the downstairs hall. I wonder if this register is too close to the furnace, still we have had this trouble only since we have used the new burner. On cold days we get an odor similar to that given off by some furnaces when you start them for the first time in fall. Please look over the attached sketch and make suggestions.*

E. J., MADISON, WIS.




*Diag. 1- Poor Circulation*

*Diag. 2- New Firebox*

A. Your sketch shows a firebrick combustion chamber as large as could be built in this furnace. The bricks touch the furnace base. There's been sufficient trouble on similar installations to indicate that all your difficulties are caused by overheating of the base or "ashpit" of your furnace. This gives the reverse circulation tendency shown in Diag. 1. Replace your firebox with one of the style shown in Diag. 2. If your furnace is not considerably undersize, a firebox somewhat smaller than the one you have now will provide ample combustion chamber floor area. Make the new firebox of lightweight firebrick or use a modern precast chamber. Surround it with the high temperature insulation shown in the drawing, using a minimum thickness of 1½" where the furnace base comes closest to the walls of the firebox. Build the new sidewalls up to within four inches of the bottom of the firing door opening in your fur-

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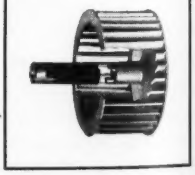

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Can also be used by taking one L-R Type "IA" body with "UX" center unit engaging jaws of fan hub. Fan manufacturers supply fans with L-R jaws on hub.

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nace; the sidewalls of your present firebox are too low.

This well-insulated, smaller, and higher firebox should cure all the troubles you describe and lead to lower oil consumption as a result of higher efficiencies and better circulation of air through the furnace jacket. The odor you notice on cold days is undoubtedly caused by overheating of the furnace. It is dust and paint scorched by the overheating of the furnace and the return ducts on coldest days. We have, incidentally, shown the smokepipe properly slanted in Diag. 2. Your sketch shows that it runs horizontally.

◈

*Q. What is the procedure for a dealer to get a stock of burners from a manufacturer that he can carry on his floor, and avoid the necessity of applying for each burner required for an approved Form 2727? It doesn't seem reasonable that we should be required to buy burners in single lots if we are now out of stock.*

B.C.F., CHICAGO.

A. You do not have to buy burners one at a time. Make application for yourself on WPB Form 2727, and send four copies to Washington the same as you do for a customer. State on your application that you are ordering the quantity of burners requested for stock, rather than for a specific installation. Be reasonable in your request. Do not ask for more burners than you are likely to need in the immediate future. As you sell them on approved customer applications, you may order more for stock.

Applications will clear in Washington faster if sent special delivery to the attention of Mr. Henry S. Norris, Room 601 Stewart Building, 1014 5th St., N. W., Washington, D. C. This address will avoid the necessity of clearing the applications through the Central Mailing Office, and save about 24 hours in handling.

◈

YORK Oil Burner Co., York, Pa., has received an order for a number of burners for marine heating units to be used on oil-barge towboats. Over a hundred such boats are being built to barge oil up the Mississippi and through the Atlantic Coast waterways. The burners will be used for spaceheating and to provide hot water.

### *Light Oil for Heavy*

(*Continued from page 22*)

used for heating factory buildings and offices, bore the brunt of the Government's effort to save oil. The number of separate steam raising plants in use two years ago was 531; now the number is only 313. The big plants, those using heavy oil, were tackled first, with the result that the ratio of light oil to the total of all oils used for raising steam has risen slightly in two years. Of the 218 plants converted, 94 were only partly changed over and continue to burn some oil. Also, 32 of the 218 plants converted were allowed to keep a total of 640,000 gallons in their tanks, apparently for emergency purposes, indicating that they did not refit old boilers to use coal, but put coal standby equipment into operation.

These facts strongly suggest that the volume loss to fueloil suppliers due to industrial plant conversions will be only temporary, for the most part. As soon as the tankers return to their old sea lanes, oil will replace coal in the majority of converted plants, as over half of the conversions either were only partial or in-


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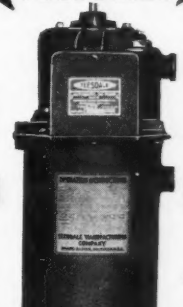

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volved merely the shutting down of oil boilers and the starting up of coal boilers. But when that time comes the present trend to distillate consumption will be reversed; steam raising boilers will demand more residual while processing furnaces will probably slow down and consume less distillate.

◈

## New Englanders Told Oil Supply Is Better

HEATING OIL for New England, "at least as much as last year" has been promised, Allen H. Hand, secretary-treasurer of the Petroleum Industry War Council, told the industry meeting of the Oil Heat Institute of New England at Boston, November 3. He paid tribute to the oilheating industry in New England for its work last winter "in spreading out the limited quantities that came most of the time on a day to day basis," and thus avoided acute hardship.

"There will be an ample supply of heavy fueloil on the East Coast this winter unless the local transportation or distribution systems break down," Mr. Hand told the New England dealers. "The Petroleum Administrator's office has stated there will be sufficient light heating oils made available this season to supply civilian consumers with at least as much as last year. Kerosene inventories now are as high in Zones 1 and 2 as they were at the beginning of December last year, but they are better located. There are about 1,000,000 barrels more kerosene in New England now than at the start of last heating season. The heating oil stocks in New England have been increasing since early August at a rate of approximately 200,000 barrels a week and are now about where they were at this time in 1942.

"As to next winter, if the war is still on, it is my belief that the government—industry partnership of PAW and PIWC backed by the industry itself, will somehow provide sufficient oil that homes, factories and other buildings will be heated at least comfortably," Mr. Hand continued. "The unknown factor is the amount of military takings."

Mr. Hand also stressed the need for a higher oil price to stimulate discovery, but predicted that additional production from West Texas fields will offset the declining production in other parts of the country and assure sufficient oil for the immediate future at the present rate of demand.

Representative Chester E. Merrow of New Hampshire condemned proposals for subsidies by government, and warned that "fundamental problems of production and distribution can't be solved by the simple expedient of drawing a check on the Treasury of the United States." He also pointed out that debt increases to pay subsidies may exert as great an inflationary effect as a rise in the price of a few commodities. Congressman Merrow spoke of the serious coal shortage in New England, due to strikes, shortage of labor and transportation difficulties. "I feel, however, through my contracts with the Administrator of Solid Fuels, that everything possible is being done to get coal into the colder areas first so that suffering will be minimized," he said.

Don J. Edwards, president of OHI of New England, pledged the organization


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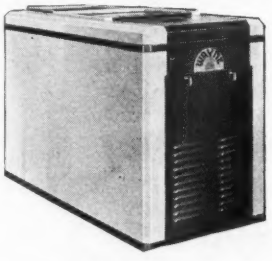

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to do everything within its power to avoid hardship among consumers. The organization membership includes many distributors that handle both oil and coal. "Regardless of what happens, 'they shall not freeze' must be the watchword of both solid and liquid fuel suppliers," Mr. Edwards pledged.

Fred N. Beckwith, executive secretary and treasurer, reported to the membership on the semi-annual meeting of Oil Heat Institute of America at Chicago, and outlined the program ahead of the national organization. The New England organization now has a membership of about 150 distributors, he reported, and is increasing steadily. A series of nine industry meetings have been held by the officers in various sections of New England to instruct dealers and distributors on government regulations and the manner in which they are to operate under them. This vigorous program, coupled with a bulletin service out of headquarters at Boston, has kept New England dealers among the best informed group in the industry during the war period.

OHI of New England will hold its annual meeting and dinner in March.

## Distribution Division Tackles Manpower Problem

PROBLEMS of shrinking manpower for oilburner service against a rising demand for competent maintenance by desperate users have been taken up by OHI's Distribution Division with the War Manpower Commission at Washington. Lester Scott, chairman of the Legislative Committee, has presented the industry's case to the Commission, backed by figures on the acute service manpower shortage in the business.

Though final word has not been received from WMC, there are indications that oilburner servicemen will not be put on the critical list. This list now is overcrowded, and occupations are more likely to be dropped from the list than added to it. Most industries can prove manpower shortages, and are demanding the protection of a listing as critical.

Figures collected by OHI from FUEL-OIL & OIL HEAT and other sources indicate a total of 4,620,270 oilburner installations for heat, power and processing in the country, of which 2,386,290 are domestic central heating; 1,865,860 are domestic and commercial space heaters; 293,120 are commercial and apartment and commercial heating; and 75,000 are industrial installations.

In 1941 there were 14,400 oilburner dealers in the country operating with an average of 2.9 fulltime service mechanics, or a total of 41,760 servicemen employed. At present there are 8,250 dealers doing oilburner service, each employing an average of 1.4 servicemen, or a total of 11,550 men. More than 72% of the industry's service manpower already has gone.

Apparently the only safe way for dealers to protect their servicemen and oil truck drivers is to get "locally needed" designations such as has been done by Oil Heating Institute of New England, Chicago Burning Oil Dealers Association, Oil Heating Division of the Merchants and Manufacturers Association at Washington, and others.

◈

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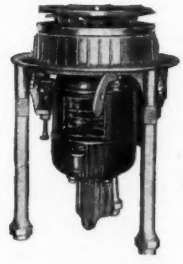

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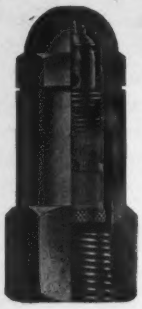

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### *Electric Motor Service*

(*Continued from page 26*)

wards determining if a condenser is good or bad. Yet, a few simple tests tell a great deal about this.

If the condenser has an open circuit, the motor simply will not start. It will act as though the starting switch were open, and exactly as a split phase motor acts when its starting switch is open. Under these conditions, give the motor a hand-start to check on the running winding. If you find that this winding is in good condition, simply place a temporary jumper across the two terminals of the capacitor, and with no load on the motor give it current for a few seconds to determine whether or not it now has a tendency to start. With some motors of this type, a resistor can be used across the capacitor instead of a wire jumper to restrict the flow of current to the starting winding. With the capacitor thus shunted by a wire jumper or a resistor, the motor should have a tendency to start with no load on it, though since it lacks the benefits of a proper capacitor it will not develop its full starting torque.

This is not good practice for ordinary service men, but it has been used in emergencies by experts: For an emergency when in cold weather there was no other way to provide heat speedily, a lightly loaded capacitor-start motor has been operated with a jumper or a resistor across the terminals of the defective capacitor, after it was ascertained that the motor could snap up to speed quickly rigged in this temporary manner, and that therefore there was no greater danger of the starting winding being burned out because of the motor's inability to start or come up to speed.

The check-up for a capacitor suspected of having an open circuit is, then, to test with a jumper across the capacitor terminals. Lightly loaded, the motor will start, though it will not have its proper starting torque.

With a short-circuited capacitor, a motor will tend to start but will be feeble on starting. It may start with no load but if its full starting ability is needed it will not be able to start under normal load.

A healthy capacitor can be charged by connecting it across a 110 volt source of current (check for an internal short-circuit first, else you may blow a fuse in trying this), then uncoupling it from the source of current, then connecting its terminals. As this is done there will be the flash of a small spark as the capacitor is discharged by the shunting. Make the test half a dozen times before you decide that a capacitor is defective, for it must be given several opportunities to be charged by alternating current. If you obtain just one flash of current from a capacitor that has been charged, you may conclude that it has passed this test and can hold a charge. A defective capacitor that cannot hold a charge must be replaced.

The methods for reversing capacitor-start motors and split-phase motors are the same: Undo the internal connections to the stator coils, if necessary, and reverse the leads to the starting winding, or reverse the leads to the running winding. It is necessary for oil burner service men to do this at times, for example when a stockroom motor is connected internally for the wrong direction of rotation.

The split phase, repulsion-induction,


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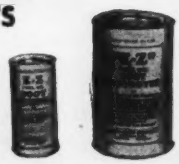

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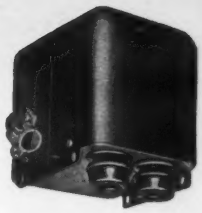
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and capacitor-start induction run motors all operate, when at normal speed, in step with the beat of the alternating current fed to them. Thus they are controlled speed motors and even if relieved of loads entirely will not overspeed. The speed attained by these motors depends on the number of field windings which are arranged in the motor to give magnetic poles. Examination of a two-pole motor will reveal quickly and unmistakably that there is one pole winding at each side of the stator. Examination of the inside of the stator, or the ends where the windings are visible, will bring out this information.

Table 1 indicates the synchronous speeds (which would be attained by rotors entirely free of bearing friction and drag of air on the moving parts) and the approximate actual full load speeds of the motors that are standard for domestic oil burners. The rotors can never reach the synchronous speed, yet these speeds are significant. They indicate the speed of the magnetic flux that is drawing the rotor around. Full load speed of 3450 rpm, marked on a ¼ hp. motor, means

Table 1

| *Number of Poles* | *Synchronous Speed* | *Approximate Actual Full Load Speed* |
|---|---|---|
| Two | 3600 rpm | 3450 rpm |
| Four | 1800 rpm | 1740 rpm |
| Six | 1200 rpm | 1125 rpm |

These data are for 60 cycle motors.

simply that with the motor working under a load of ¼ hp. the manufacturer expects it to spin at 3450 rpm. A load that slows this motor considerably under this, say down to 3300 rpm, would equal more than ¼ hp. and if applied continuously to the motor could be expected to overheat and ruin the insulation.

Thus we know the approximate speed of alternating current motors of the induction type, and this is based on the number of poles in the stator windings. A marking of 1725, 1740, or 1750 on a motor means that it has four poles. (60 cycle current.)

*George A. Meyer* has been appointed general sales manager of Advance Pressure Castings, Inc., Brooklyn.

## Tri-trol Issues Booklet

OF INTEREST to heating equipment dealers is a new 16 page sales presentation just published by the Marsh Tritrol Co., Chicago. It discusses the vital need for saving fuel used for space heating, and explains how this can be accomplished with the company's Tri-trol regulator, without priority.

The booklet is compiled in graphic style. Simple charts and diagram used throughout tell how the Tri-trol controls heating according to outside weather, how time of morning warm-up and night shutdown are varied automatically, how the control includes everything necessary for completely automatic heating. By means of all these short cuts and refinements, according to the booklet, the Tri-trol reduces fuel consumption 15%-20%.

This new sales presentation has been published to tie in with the Government's Fuel Conservation Program. It was introduced to dealers and contractors at a series of sales meetings conducted by the Marsh Tritrol Company, as part of a complete new program.

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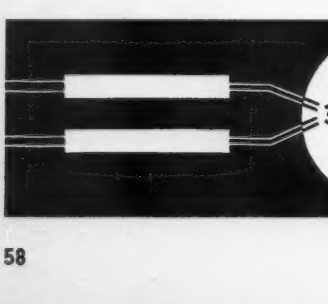

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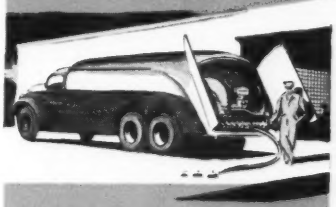

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